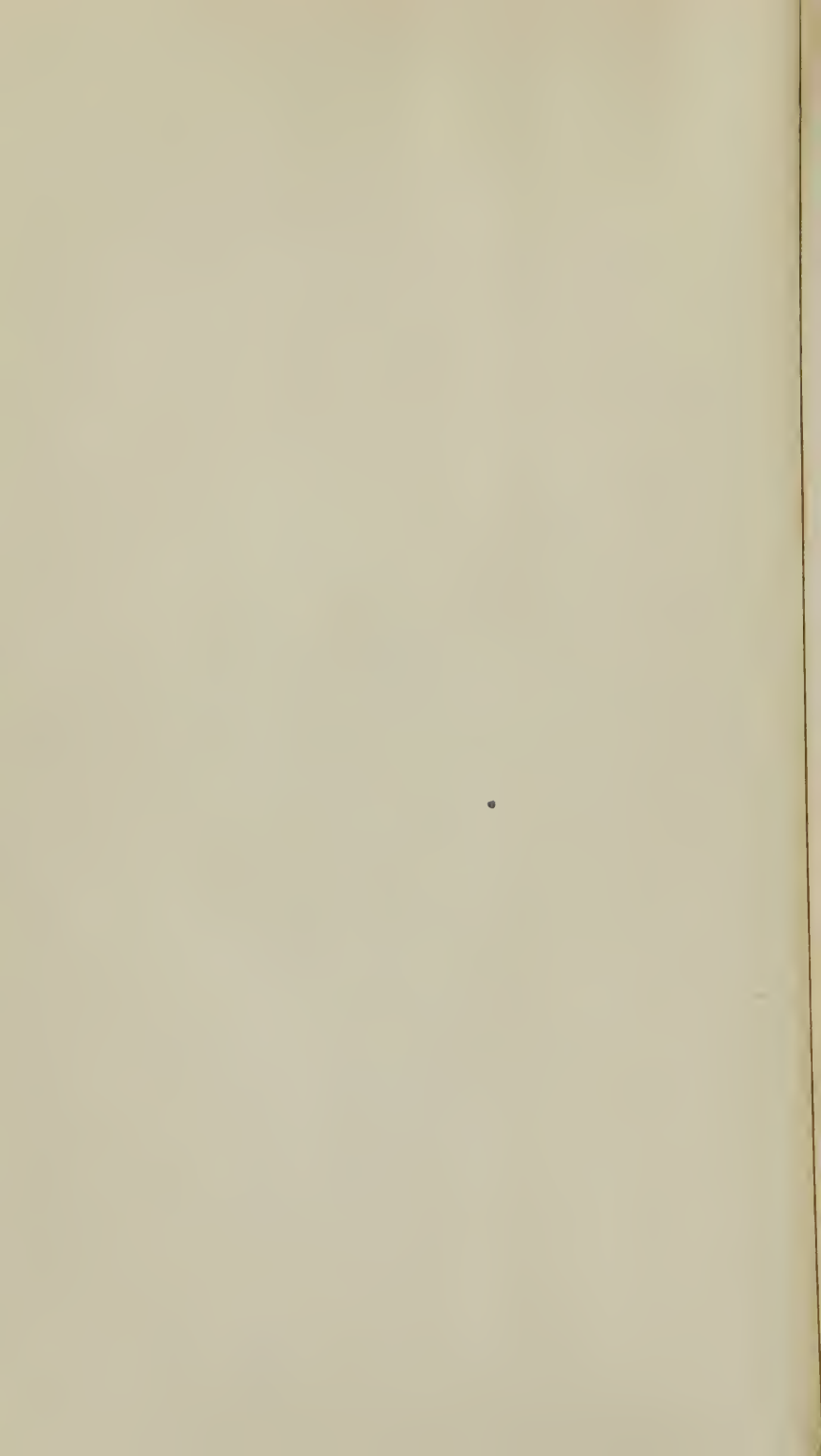


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THE DOCTRINE

OF THE

*Presented by
H. W. R. ...
...*

UNITY OF THE HUMAN RACE

EXAMINED

ON THE PRINCIPLES OF SCIENCE.

BY

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PREFACE.

The author of this Essay submits the following explanation of the circumstances which have finally led to its publication.

The Literary Club of Charleston, aware that his early studies had been directed to Natural History, and that in the pursuit of his profession as a clergyman he had felt himself constrained by a sense of duty to investigate those branches of science that appeared to militate against the truths of Christianity, had during his absence from the city in September last selected "the Unity of the Human Race" as a subject to be discussed at the meeting, which would next in turn take place at his house. He accordingly hastily prepared some notes which he read before the Club. The subject being full of interest was discussed at several successive meetings, two or three of which were occupied in an examination of the question on purely scientific grounds. The notes made during those hours of leisure which could be stolen from multiplied avocations and cares had insensibly accumulated on his hands. At the close of the discussion those members of the club who coincided with him in sentiment, requested their publication, and several of the advocates of a plurality in the races, expressed a desire that the public should have an opportunity of becoming acquainted with the observations and views of an opponent, from whom they honestly differed. He accordingly, amid many interruptions, collected the notes he had previously written, and made such corrections and additions as subsequently occurred to him. This may serve to account for an occasional repetition and an apparent

want of method, defects which might have been avoided if he had previously entertained the most distant idea of publication, but which a pressure of other avocations will not now permit him to remedy.

It may be proper to add that this Essay was prepared in its present form in November last. The Appendix was added during the time when the printing was in progress.

The division into Chapters was only decided on after a part of the work was in print, hence the first chapter might have been advantageously subdivided.

In discussing a subject the most difficult in the whole range of the sciences, he has often felt himself obliged to differ from the views of other naturalists. These happen to be, in several instances, his co-labourers, members of scientific associations with which he is connected, his correspondents and personal friends. He need not add that he has been studious that no difference of views should be expressed in personal or offensive language. Men of science will fully understand this, and he only refers to it here as an explanation to the public to show to them that a difference in opinion can have no influence in weakening the bonds of mutual respect and attachment.

In his attempts at defending the long established doctrine of the Unity of the human race, he has neither sought for fame, or courted controversy ; to the former he believes he is now indifferent, and the latter is adverse to his feelings, his profession and the admonitions of declining life. If, in this publication, he shall inadvertently give offence, he will regret it ; if errors have escaped him, he is ready to correct them ; and if he has been enabled to add any fact to the stock of human knowledge, or any argument in defence of truth, he will feel that his labours have been amply rewarded.

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UNITY OF THE HUMAN RACE.

Admitting that this is a subject of deep philosophical inquiry, surrounded by difficulties,—some of which have hitherto been, and will probably long remain, beyond the reach of the human intellect to fathom,—we readily concede to all men of science the privilege of pursuing these investigations, irrespective of any supposed decisions which may have been pronounced by the Scriptures. The enlightened Christian is satisfied that the Author of the Inspired Word is also the Author of Nature, and, therefore, that the teachings of the one can never conflict with those of the other; that when the wisdom of men shall enable them to interpret the Scriptures aright, and read with intelligence the phenomena in the Book of Nature, both will be found to harmonize. He has, therefore, nothing to apprehend from the freest investigations of the subject. The Biblical student seeks from all sources those lights that will enable him to understand the meaning of Scripture: and if Astronomy, Geology, and Physiology, in their various teachings, can aid him in rightly interpreting those passages of Scripture which to him are obscure, he will thankfully accept the aids which science affords. The Christian cannot blame the men of science if, by their investigations of the laws of nature and the anatomy and physiology of the varieties of the human race, they can clearly show that they are different species; nor should the physiologist, on the other hand, in any stage of

the investigations, and more especially at this time, when we are only collecting materials on which a theory is in future to be founded, feel himself authorized to bend the Scriptures to his peculiar views, and deny their Inspiration, and consequently their authority, in all those passages which are opposed to his particular theory. The advocates of a plurality of races should especially be on their guard lest the enemies of our domestic institutions should have room to accuse them of prejudice and selfishness, in desiring to degrade their servants below the level of those creatures of God to whom a revelation has been given, and for whose salvation a Saviour died, as an excuse for retaining them in servitude. The fact that nature has stamped on the African race the permanent marks of inferiority—that we are taught by their whole past history the lesson of their incapacity for self-government, and that the Scriptures point out the duties both of masters and servants, should be sufficient to dispel every improper motive in an unbiassed search after truth alone. There is, therefore, room on both sides for the indulgence of a large share of mutual forbearance, candour, and charity. When pursued with proper caution, and in a proper tone and spirit, these philosophical investigations are calculated in the end to be productive of good. We fear not the result: the human mind is often slow in arriving at truth, but as it is an emanation from the Author of all wisdom, we are warranted in believing that it must ultimately prevail, and that truth will beget truth. Hence, in the examination of this subject, we shall confine our remarks exclusively to the teachings of nature in a discussion of her laws, without making any reference to the authorities contained in Scripture. Were we to resort to the latter mode, and appeal to revelation as the only infallible guide to direct us

in this inquiry, there would be no difficulty in establishing the doctrine. But this would not be regarded as the legitimate mode of treating a philosophical inquiry ; nor would it be acceptable to a vast number of those who are desirous of seeing this subject investigated solely by the laws of science.

In advocating the theory that man is composed of only one true species with an almost infinite number of varieties—some of which are of a permanent character, and would forever remain so, if there should be no intermixture with other varieties—we have supposed that it might not be uninteresting to our readers to be informed of the process by which our mind was brought to a belief in the theory of the Unity of the Human Race, and the manner in which our investigations in the various departments of nature were pursued from early life, through a long series of years.

Our earliest studies were devoted to an examination of the vegetable kingdom ; our attention was then directed to the Ornithology of America ; and lastly it became a duty from a kind of necessity to investigate minutely the Genera and species of quadrupeds ; to decide on those specific characteristics by which they were to be distinguished from each other, and to describe separately a race of mammalians that by their anatomical structure and physiological characters, approached nearest to the human species. We ascertained that in botany, ornithology, and mammalogy, the characters by which they could be known, as genera and species, were very uniform in all species that had not been subjected to culture or domestication, and had not been removed from their natural soil and climate. So plain, striking, and permanent, indeed, are these characters that a naturalist of common sagacity could not fail to fix the species in any country, even from prepared specimens.

It has recently been asserted by the advocates of the plurality of races that we possessed no distinctive characters by which species can be designated.

It may be admitted that in the lowest order of animals—the zoophytes—whose characteristics we have only begun to investigate, or in the fossils, where fragments of the vertebræ of extinct species are only presented to the geologist and the student of extinct races of animals, formidable difficulties may be presented. A scale may enable us to decide on a genus of fish, but it affords no true criterion for the formation of a species. The tooth of a quadruped may present characters for the designation of a genus, but it requires an examination of the whole animal, not only in its internal structure, but external form, to designate a species. We contend, however, that naturalists can be found both in Europe and America who, without any vain boast, can distinguish every species of bird and quadruped on their separate continents, and that the characters which distinguish and separate the several species are as distinct and infallible as are those which form the genera. This point, however, is so well understood and so freely admitted by naturalists, that we regard the matter as settled by the nearly universal admission of all that have ever devoted themselves to these subjects.

In the course of our investigations, however, another subject was brought to our notice which occasioned much embarrassment, and hence became a work of patient labour through a succession of many years. Plants that had been introduced into our country from abroad, either accidentally or for cultivation, were found to have varied exceedingly from their original forms, insomuch that American botanists were beginning to describe them as

new species. Birds subjected to domestication had produced striking and permanent varieties ; a few wild animals, such as several species of squirrel, the white-footed mouse, the fox, the common wolf, and the Virginian deer, whose geographical ranges were wide and extensive, had varied greatly in colour, size, and form from their original types ; and above all, the animals which had become the companions and benefactors of man, by contributing to his sustenance and comfort, had multiplied into so many distinct varieties, that naturalists found it more difficult in every succeeding age to settle on the origin from which each species was derived. A visit to Europe afforded us opportunities of carrying with us American specimens of plants, birds, and quadrupeds of all species, either identical with, or closely allied to, those of the Eastern continent. The cabinets of individuals, the public museums, and the zoological collections of living animals were freely opened to us, and the best naturalists of Europe and the world, united with us for many months in patient, minute, and varied examinations and comparisons. These were conducted in London, Edinburgh, Berlin, Dresden, and at the Association of European Naturalists that met in Germany. Several of these gentlemen became our fellow-travellers in our search after the original plants that have been subjected to domestication and culture, which we found on the mountains, in the forest, and by the way sides. The names of these naturalists are not unknown to the world of science. In the course of these investigations, the plants, birds, and quadrupeds of both continents that were nearly allied to each other were subjected to the closest scrutiny. Many of the original plants from which had proceeded the varieties in horticulture, were collected from their native soils, and compared

with those in a state of cultivation. The birds in domestication, were compared with living specimens procured from their native wilds. Our domesticated animals were investigated. The wild horse from the mountains of Asia, its original birth place, was subjected to examination. It may, like those of America, have escaped from domestication and grown wild, yet, no doubt, it there presents itself in the original type ; with it was compared the wild ass of Tartary. It is worthy of remark that the horse, the largest known companion of man, and the most intelligent of our animals, has only two domesticated species in the genus,—the horse and ass,—and that no intermediate variety has been produced, notwithstanding all the effort and ingenuity of man in his attempts at mixing the breeds. The wild *bos taurus* from the forests of Lithuania was compared with all the varieties of the domesticated cattle. The wild hog from the forests of Germany was compared with its descendants of every size, form, and colour. The wild goat from the mountains of Persia, India, and Europe (*Capra aegagrus*) was compared with the domestic goat, the Syrian, the Angora, the African, Capricorn, and an endless variety of others, with all shapes and sizes of horns, their bodies differing widely in form and size, some covered with the coarsest hair, and others with the most silky down that has ever been used in the manufacture of cloth. The wild Musmon from the mountains of Corsica was compared with the varieties of the domesticated sheep, nor did we omit to examine the wild Lama, the Huanaco, and the other camels of Peru. The domesticated dog was the only animal whose origin we could not trace in such a manner as to enable us to express a unanimous sentiment—some supposing his origin to be that of *canis anthus*, if, indeed, this is not a mere variety grown

wild in Abyssinia ; the majority, however, inclining to the belief that he was a descendant of the common wolf.

The conclusions to which our minds were brought by these investigations, amounted to a conviction in regard to the following facts. That all quadrupeds, birds, and plants, when in a state of domestication or of cultivation, were subject to most remarkable changes, and that these variations seldom occurred unless they were removed to other soils, other latitudes, etc.; that these varieties were sometimes produced in mountainous regions, and at other times in vallies or low moist situations. Thus the original apple and pear growing in England, and which in its native soil has undergone no change within the knowledge of history, on being transplanted into Asia and the south of Europe, has produced endless varieties of the best fruit. The bitter native peach from Persia became a delicious fruit when removed to Italy and Spain, producing the apricot and nectarine,—and more especially have its varieties been multiplied in the temperate regions of America. The Irish potato (original specimens of which we compared) a little bulb the size of a ground-nut, found in Chili, South America, and which has never undergone a change in its native country, when carried to Europe became a large edible vegetable supplying food for millions of the human race. A small weed growing on the cliffs of England (*Brassica oleracea*) has there never undergone any change, but when transplanted to Italy, France, and Germany, produced all the varieties of cabbage, the colewort, and the cauliflower. So with the carrot, the beet, and every vegetable that has ever been cultivated for the sustenance of man or beast, and with every kind of grain from the wheat and rice down to the oats, Indian-corn, millet, and the other cereal grains. The long staple cotton, the effects of cultivation, and the

immense number of new varieties annually produced, are sufficiently known to our planters in the Southern States. Passing on to domesticated birds: the common fowl, the peacock, the guinea-hen, the duck, the goose, the turkey, and the pigeon, have so departed from their original wild forms that they bear but a shade of resemblance to their primitive stocks. The quadrupeds in a state of domestication present still greater variations. In their native wilds they have generally remained unchanged, but when removed to other lands they have presented the most striking varieties, producing breeds that have become permanent, and would continue so till the end of time, if they were not removed from the localities where they originated, and remained unmixed with other varieties: and what is particularly worthy of observation, is the well established fact, that when these new varieties of plants, of birds, or of cattle are again carried back to the countries where the original species existed, no change of culture, no variation of food, and no neglect of treatment, can ever again bring them back to the original wild stock. The varieties once formed remain permanent, other varieties may spring from them, but those do not return to their original forms.

Such is the uniform process of nature in every one of her departments. There is not a solitary exception to this law, which, although it cannot be fully explained by any process of human reasoning, is established by the best of all arguments,—the naked and undisguised facts,—attested by the experience of all who have closely investigated the operations of the laws of nature.

In order to satisfy our mind in regard to the true origin of the many striking varieties that existed in the various departments of nature, and had become as permanent as the species themselves, we concluded to institute a series

of experiments to enable us to ascertain whether the admixture of two species might not produce a fertile progeny, that would in this way propagate what might be regarded as a new species. If this could be effected then we might say, in regard to some of the species at least, that God did not create them, but that they were formed by artificial means; in other words, they were produced by art or accident. We subjected the plants, birds, and quadrupeds to those modes by which two different species could produce offspring. In this way we succeeded in obtaining, either by our own labours, or by receiving from others who had produced them, a greater number of hybrids than any other individual in our country. They proved sterile in every instance but one, the hybrid between the China and common goose, which was partially and temporarily fertile, and whose peculiarities we will presently explain. Our mind was satisfied that a union of two species could not produce a new race, and that species were the creation of God.

When these investigations were made on our part our only object was to trace the origin of plants, birds, and quadrupeds that had been subjected to transportation, to culture and domestication. We sought not to establish any particular theory. The investigation of the unity or the diversity of the human race had not then entered into our course of studies. Since our return to America however, that subject has agitated the public mind to a much greater extent than formerly. Having collected the materials in other departments we have brought them into requisition in investigating this difficult study. In doing this we strove to remove from our mind the prejudices of education and the bias which peculiar religious views are apt to engender. That we are wholly free from them it does not become us to assert, but that we have endeavoured to be so we can conscientiously declare.

It will be perceived that in the course of our examinations we were influenced very little by the theories and authorities of others, aware that in relying solely on the authorities contained in voluminous publications a man may form almost any theory and bring an endless number of published so-called facts to prove it. We sought to satisfy our own mind by a series of examinations and experiments, in order to ascertain whether reliance could be placed on authorities which have been so often quoted that, in too many instances, they have been received as established truths, and made the ground-work of new and fanciful theories. We have therefore recently read very few of the numerous works written on the subject, as there were not many original observers among these writers. The scanty materials of a few facts detailed by others formed subjects for the speculations of philosophers in their closets who did not produce to the world a single fact, the result of their own observations or research. In preparing these notes we have even resolved not to refer to Prichard—who, we believe, is justly regarded as one of our best authorities—whose work we read with great interest some years ago, (and which is allowed even by his opponents to have been written in a spirit of great fairness,) and many of whose arguments we at the time considered unanswerable. We are aware of the facility with which the mind insensibly slides into other men's modes of thought, and adopts their opinions, and we therefore supposed that our readers would prefer a detail of original experiments and examinations, pursued without any regard to theory, and without being biassed by authorities,—although they might be far more deserving of public confidence.

Regarding man then as a domestic animal, an inhabitant of every land and every clime where he can breathe

the air of Heaven, and find food to sustain life, he must be subjected, in our examination of the various races of every colour and structure of skull, to those same laws by which we investigate the other departments of nature under similar circumstances. It must be admitted by all that this is a legitimate view of the subject, and one of the fairest that that can be adopted in our search after truth.

Many volumes have been written on this subject. Scientific travellers have hunted up the mummies of Egypt, and ransacked the long-forgotten grave-yards of extinct tribes known only from tradition. They have copied the heads on the obelisks, and dug out of the earth ancient coins to ascertain what were the shape of the heads of the progenitors of the various races. The different languages have been studied in order to ascertain the origin of each, and thus enable them to decide from ever-varying dialects the difficult problem,—which were true races, and which were only varieties? The last enumeration of these languages we have seen gives us 3664 known languages in the world; of these 937 are Asiatic, 587 European, 276 African, and 1624 American. Volumes have also been written to show how in the process of time, climate alone could effect a gradual change from a negro into a white man, and *vice versa*: by insisting too much on the latter argument we think the cause of those who advocated the doctrine of the unity of the races has been somewhat weakened. Others again have studied the charts of the oceans to ascertain through what chain of islands, or from what quarters, and from what races, the American Continent has been peopled. It has, however, appeared to us that physiologists have been laboring at details before they had established first principles. To our mind the field of argument may be much narrowed down by an examination of a single point, viz:

what are true species, and what must be regarded as only varieties? We admit that in man, as well as in all other domesticated animals, there is some difficulty in deciding on those true characters which distinguish a species from a variety: still we conceive that we are not left without a guide through this labyrinth of difficulties; and by an examination of what are well-known varieties in many species of birds and quadrupeds, we possess all the means of enabling us to decide on the species and varieties of men.

The class of mammiferous animals to which man belongs, and of which he is placed in the highest order—is composed of orders, genera, species, and varieties. The class includes all animals born alive and nourished by the milk of the mother.

Orders are subdivisions of the class; thus the order *Bimana* is restricted to the human species alone; *Quadrumania*—four-handed—the monkeys; *Carnaria*—the bear, cat, seal, &c., composed of eaters of flesh; *Marsupulia*, pouched animals. In this way the whole class is divided into nine orders, including all the mammalians.

Genera are subdivisions of the animals in the several orders—thus all the species of horse, including the ass, zebra, &c., are arranged under the genus *Equus*—the immense family of cats under that of *Felis*. Genera are formed from the number and distribution of the teeth, number of toes, character of the nails, etc. Thus the species in the genus *Canis*—the dogs have 42 teeth; the genus *Felis*—the cats 30 teeth, and retractile nails. All the species, then, must have the essential characters that belong to the genus. The genus *Homo* is characterized by the possession of 32 teeth: 8 incisors, 4 canines, and 20 molars. He has 2 hands and 2 feet; he is pendactylous, with a thumb on each hand, the fingers and toes being protected by a flat nail.

He has 2 mammæ, situated on the breast—his skin is naked—head covered with hair—he possesses a heel, which is wanting in nearly all the other mammalians. His eye is so constructed as to enable him to direct his sight horizontally, and is adapted to his erect posture. In the external form of the body it must be admitted that all the races of men agree so perfectly in all those characteristics on which genera are founded, that it is not necessary to detain the reader by any laboured arguments to prove that they all belong to the same genus.

Species we define as applying to those individuals resembling each other in dentition and general structure. In wild animals, as a general rule, they must approach the same size; but both in wild and domesticated animals they must have the same duration of life, the same period of utero-gestation, the same average number of progeny, the same habits and instincts, in a word, they belong to one stock that produce fertile offspring by association.

In order to show the modes adopted by naturalists in distinguishing species from each other, we will elucidate the subject by citing one or two familiar examples. Our common fox-squirrel (*Sciurus capistratus*) and the Carolina squirrel (*S. Carolinensis*) by their number of teeth and general structure, belong to the same genus, (*Sciurus*), but in examining into other peculiarities we find a striking difference. The fox-squirrel is uniformly double the size of the other; it runs into varieties of colour—gray, red, and black—the other is uniformly gray. The fox-squirrel leaves its nest late in the morning, and retires early in the afternoon. The other rises at early dawn, lies up at noon, is active toward evening, and retires after sunset. The former lives on high pine ridges—the latter delights in low, swampy grounds. The former on an average produces three young—the latter five. They

never copulate with each other, and no instance is known, even in domestication, of their having produced young by an intermixture. Thus from their difference in all these characteristics they are decided to be two species. Our gray rabbit (*Lepus sylvaticus*) and marsh rabbit, (*Lepus palustris*) are different species. The former has uniformly longer legs, ears, and tail, than the latter; its tail is white on the under surface, and in habit it avoids water. The latter has shorter legs and ears, and the tail on the under surface is brown; when pursued, instead of making for the high ground, it speeds to the first pond or reservoir overgrown with rushes, swims readily, sinks its body under the water, with the nose only protruding above the surface. The two species never have been known to produce an intermediate fertile progeny. From these differences in form, colour, and habits, they have been decided as composing two distinct species.

Varieties are those that are produced within the limits of a particular species, and have not existed from its first origin. They sometimes originate in wild species, especially those that have a wide geographical range, and are thus exposed to change of temperature, climate, etc. But they always occur in animals that have been subjected to domestication. A change of food, habit, or climate, seems to have contributed to this, as the original stocks from whence they sprung, in almost every case, still exist in a wild state, where they have undergone no change; but after a few generations of domestication, every known species of animal or bird has changed from the original type, and presented remarkable varieties. Permanent varieties are such as having once taken place are propagated in perpetuity, and do not change their characteristics, unless they breed with other varieties. In the latter case

their offspring usually are intermediate between the two varieties. Among horses, the large dray-horse, the racer, and the Shetland pony, etc., are permanent varieties, because they not only differ in size and form, but each produces its own variety. So with the various breeds of cattle, of sheep, goats, geese, and ducks, which have produced striking varieties that have become perpetuated: these all are regarded as hereditary and permanent varieties.

We have already pointed out those characteristics that, agreeably to the laws of science, embrace all the races of men under one genus. Let us now pursue our examinations in regard to those characters which are necessary to constitute a species circumstanced like man, who is every where a domestic animal, and whose migrations have so widely extended. His foot-prints are seen on the snows of the polar regions, and he basks on the burning line. He rears his stone cottage on the highest Alp, and finds a home in the deepest valley. His constitution may become adapted to the fogs of the rice swamps, and the smoke of his fires may be seen curling from every oasis of the sandy desert.

Two distinct species of animals in a wild, unreclaimed state usually differ from each other in organic structure, as well as in some outward form, size, and colour. Thus the American wild swan, (*Cygnus Americanus*) and the trumpeter swan, (*Cygnus buccinator*) resemble each other so closely in form and colour, that until recently they were regarded as one species, but by dissection it was discovered that they uniformly differed in anatomical arrangement, in the number of their ribs, and especially in the manner in which the trachea entered into the sternum;—hence their difference in organic structure, as well as in voice, warranted

naturalists in separating the species. Let us now apply this rigid rule of investigation to the anatomy of the bones and the physiology of the various organs in the different races of men. In these investigations we are willing to submit all the varieties of men to the closest scrutiny, aware that no subtlety of thought can evade the knife of the anatomist.

The human skeleton is a most complicated machine, yet all the bones are so constructed and united as to be necessary to support the various portions of the body.

There are besides the teeth, 208 bones in the human body.

We find in every race, however widely separated, the same number of bones ; not one is absent. (Anatomists have detected differences in the number of vertebræ in individuals,—occasionally there is a rib more or less than the usual number, but these differences were found principally to exist in different individuals of the white race.) There is a peculiarity in the breast bone: in infancy it has 8 pieces, in youth 3, in old age but one. This exists uniformly in the white, the black, and the Mongolian races, and in all the intermediate varieties. The skull is composed of 8 bones; each ear has 4 small bones—the face 14.

In all these particulars there is no difference among all the races.

There is a peculiarity in the dentition of the human species. There is a set of temporary or milk teeth, twenty in number, that are received in childhood, and drop out between 6 and 14 years of age, when they are replaced by the 32 permanent teeth. The dentition of animals, even of very closely allied species, differs, in some particulars,—so that this affords a guide in designating species. Thus we were enabled to find a peculiarity in the Carolina gray squir-

rel, which had been confounded with other species, by ascertaining that the milk teeth, which dropped out in other species at an early age and were not replaced, remained permanent in our species. Every variety in the whole family of man exhibits the same uniformity in regard to the shedding and renewing of the teeth at a particular age.

The trunk has 54 bones. The spinal column is composed of 24 pieces of bone, each piece being called a vertebra.

We will not, however, impose on the patience of our readers in entering into minute details further than to observe that the phalanges of the fingers have three ranges of bones, whilst the thumb has but two. The adaptation of the hand to all the mechanical offices of life is a wonderful provision of Providence. The tarsal and metatarsal bones of the foot are equally striking and peculiar in their structure, differing from every other species in the animal creation.

Yet in all these minutiae, the various races of men agree in the number of bones. Even in their structure and position there is nothing so peculiar as to warrant us in separating the species: the difference in form is certainly less than may be observed in those of a corresponding character in the varieties of domesticated animals. We are aware that in the white and black races the bones of the leg do not exactly correspond in shape, and that the *os calcis*, or heel bone, is not precisely of the same form, or in the same position, in the black and white man; but who among our anatomists has instituted a similar comparison among intermediate races?

And here we cannot but express our great regret that in examining these subjects on the principles of science, we do not possess the materials for fair and faithful anatomical comparisons. Many of those who have honestly adopt-

ed a belief in the plurality of the races, have been influenced solely by a comparison of the two extremes of the human race, the white and the black. Some of these gentlemen are eminent anatomists and physiologists. What we require of them is not a comparison merely of the skeleton of a black with a white man: we are anxious for anatomical preparations with faithful drawings, like those in Morton's *Crania Americana*, of the kindred races of the African in their approach to the Arab on the one side, and the Mongolian on the other. Then also anatomical examinations, with good figures of the varieties that exist in domesticated animals. In the latter, as far as we have been able to observe, there are striking differences, even in the number of vertebræ,—these differences, we think, without having made any very satisfactory examinations, exist in the varieties of the dog, the sheep, and the swine. We are most willing and anxious to submit the subject to this scientific test, and believe that it will then be proved that in the human skeleton there is not as great a departure from the original type, as has taken place in the varieties among inferior animals.

Having now seen that in the anatomical structure the varieties of men do not present sufficient characters to authorize us in separating them into species, let us take a passing view of the physiological structure of these various races.

In the number and arrangement of the muscles in every part of the body—in the digestive, circulatory, secretory, and respiratory organs, no difference among all the races of men has ever yet been detected. The temperature of the body is the same in all, or at least does not differ more between the Caucasian, Mongolian, or African races, than is found among individuals of either race.

There is in one part of the human frame a beautiful mechanism, called the larynx, which differs from that of all other animals, and gives to our race the power of speaking and singing. The tongue, the muscles of the face, and even of the nasal organs, are all agents in aiding the voice in the various intonations. No instrument has yet been invented that has been found to imitate these tones of the human voice. And here, if there were in reality different species of men, we would expect to find a different structure in the larynx of each. Even closely allied species of animals and birds differ in voice so strikingly that those who have accustomed themselves to listen to these notes have learned to know the many species of warblers and fly-catchers, not by the sight only, but also from their notes. The voices of the closely allied species of Canada goose, China, and common goose will designate the species without the aid of the eye. In examining the larynx of each we will find a peculiar structure which designates the origin of these various sounds. The larynx of our mocking-bird, as well as that of the nightingale, both of which have been dissected, not only afford evidences of the structure necessary to produce their imitative and melodious sounds, but serve to designate the different species.

When, however, we look at this complicated, and even mysterious, structure in men of all races, and of every shade and colour, we find it the same. The same power of speech, the same power of song, the same love of music, exists in races the most widely separated from each other in colour. The African girl may be heard warbling the song she has caught from her mistress, whilst the latter is still obliged to be confined to her notes under the direction of a master.

There is yet another peculiarity that demands our parti-

cular attention in our investigations on this subject. Different species of animals, however closely allied, exhibit peculiarities in the period of gestation, and in the number of their young. Thus in all the closely allied species of deer these differences in regard to gestation are observable. The red fox has a greater number of young, and produces them earlier by several weeks, than the gray fox existing in the same neighbourhood. The lynx has fewer young at a birth than the wild cat of the same genus. The eggs of the Muscovy duck require a week longer to hatch than those of the English duck, and where hybrids are produced the period of incubation is intermediate in time between that of the two species.

In all the races of men, however, we find a uniformity in all these particulars: they have the same period of puberty, the same period of utero-gestation, the same number of young—usually one at a birth, and very rarely two.

Some species of animals are longer lived than others—all the races of men, however, have on an average the same period of longevity. If the Arab, who is a Caucasian, advances beyond the usual age assigned to man, there are other varieties of the Caucasian that assimilate to the common standard. Take the Mongolian, the Caucasian, the Negro, the Malay, the American races, and the hundred other intermediate varieties, and we will find a striking resemblance in all, in regard to longevity.

Two species of animals that are nearly allied, sometimes produce sterile hybrids. This occurs but seldom, and generally by human intervention, confinement, or constraint. In rare instances this progeny is fertile when coupled with the original stock of either parents; and in a few cases these hybrids have been known to propagate for two or three generations, when they have become sterile: but we have no

case on record where a single new race of animal or bird has sprung up from an association of two different species.

All the varieties of the human species are known to propagate with each other—to produce fertile progeny, which has continued to propagate from the earliest periods on record, through every succeeding age up to the present period. In this way new races have been formed and perpetuated. Since this is known to be the case, then, if these various races of men are composed of different species, they will prove an exception to the general law by which all other organized beings are governed, and it rests with our opponents to show wherein this organization consists, and why man should be an exception to those laws of the Creator which are stamped on all the inferior races.

Let us now follow up this subject and direct our attention to the attribute of speech and the faculties of the mind—those high prerogatives of man—and we will discover that these are also imparted to all the races. The power of language is withheld from the animal world—they blindly submit to their instincts, while man, governed by reason, has rendered all other animals subservient to his purposes, and submissive to his instructions. Man has learned to act in concert; to record, if not by written characters, at least by tradition, the events of the past. Animals possess no such power. During the lapse of ages they have not been capable of transmitting any improvement to their several races. The dog may be trained to perform acts that look like reason, but his descendants possess no records of his skill, and are no wiser than other dogs. Man on the other hand transmits his knowledge to his tribe, to be treasured up for the benefit of his posterity.

In all these particulars—in the powers of speech, of

reason, and of combination—all the varieties of men exhibit evidences of a common origin.

In the whole animal creation there is not a single species that knows the use of fire to produce warmth, and prepare food for the palate. The chimpanse and the orang-outang of the East will warm themselves at the fire kindled by the natives, and enjoy its comfortable heat, but they do not possess sufficient combination of thought to enable them to replenish it with wood, or to roast their food, which in a state of domestication they greatly relish. They suffer the fire to go out, and then return to the forest, without carrying back with them the slightest practical knowledge. Not so with the human family. Every race in every land has learned the use of fire, and has brought this element into requisition for the purpose of preparing his food—of imparting warmth, and often to circumvent his game. The firing of the prairies of the west for the purpose of securing the buffalo and other wild animals was practised by the Red man before the pale faces had ever visited the plains.

Man has learnt to raise a shelter to protect him from the storm, the heat and the cold, and secure the treasure he possesses,—to make improvements in his habitation agreeably to his wants and necessities. In this way the humblest African tribes have reared villages, and made some advances in their own rude way toward civilization. But the wolf and the fox dig their burrows, and even the beaver constructs his aquatic oven, and the ant its hillock, in the same manner as their predecessors did thousands of years ago, and have not advanced one step in improvement.

In all these peculiarities the various tribes of men have not only evidenced all these powers of combination and knowledge, but they have made progress,—some nations

more than others it is true, but all have afforded proofs that this knowledge is not hidden from any tribe or nation.

In all the races of men, moreover, we will discover the same instincts,—in all the power of conscience, the recognition of truth, and in all a sense of right and wrong ; in all some sentiment of religion, some recognition of a higher power ; in all the hope of immortality ; in all the idea of a happier life, and the dread of punishment beyond the grave. Many individuals as well as tribes, among the Mongolian, African, Polynesian and American varieties, have adopted the Christian faith, and others have argued and given their reasons for rejecting it. So also among the Caucasians, the majority have received this religion as of divine inspiration, but many others of the same race have published arguments to show why they would not accept it. Yet all have admitted the truth of the existence of a God. Positive atheism is excluded from the creed of all nations.

Where we then discover so many characteristics that belong to every race, where their physical organization presents no material difference, and where the mental and moral powers are capable of improvement in all the varieties of men, what grounds have we, on any principles of science, to deny their common origin ? Have we, we ask, any two or more species of vertebrated animals in a state of domestication, which, in all the characteristics of form, internal structure, instincts, and habits, possess in common a greater uniformity than exists in the different varieties of men ? When Mr. Eyton, as we shall see presently, ascertained by dissection that there were differences in the vertebræ of some of the varieties of the hog, the fact was triumphantly published to the world as an evidence that they were distinct species : our opponents must now permit us to

use the argument on the opposite side, whilst we propose all the varieties of men as one and the same species, from the fact that in their whole anatomical and physiological organization there is not one bone or muscle wanting, and that there is a uniformity in all their habits.

But we are reminded that there are differences in the formation of the skulls, in the hair, and in the colour of these various races of men. This will serve to designate them as varieties, and many of them as hereditary or permanent varieties, but this will not, according to the laws of science, separate them as species, or exclude them from the bonds of brotherhood with the nobler race to which it is our fortunate destiny to belong.

That there are differences in skulls between the various races no one can deny. We presume that the differences in the skulls of the extreme types in the human family are so well understood from numerous descriptions and engravings, that they need not be minutely detailed here. The fact, however, must not be overlooked, that there are many wide departures from all these types, not only in neighbouring races, but in the races themselves, and even in the children of the same parents. Physiologists have for centuries been employed in endless conjectures under which types to arrange the Malay and American families, some partaking of the Mongole, and others of the Negro, and others of the Caucasian type. In fact these divisions of the skulls may serve as general outlines, but are not, by any means, universally applicable.

Can we, however, from this diversity of skull, be warranted in forming new species? Let us look at the skulls of the various races of domesticated animals. Compare the skulls of the varieties of the horse, the cow, the sheep, the goat, with each other, and you will see much greater

differences. Take, for instance, the crania of the different varieties of swine, place before you the skulls of the wild boar, the Irish graser, the Berkshire, the China hog, and a variety of narrow-headed, long-nosed hogs, found in the pine-lands and swamps of Carolina,—and if you are compelled to admit that these have all had one common origin, then you have no reason to insist that varieties of men must be separated into distinct species on account of the grades of difference that may exist in the formation of their skulls, or some peculiarity in the bones of the pelvis or the heel.

Colour is another characteristic that has been insisted on as evidence of different species. The pure African is black, and the European is white, the Mongolian olive, and the native American, has various shades of red. But none of these varieties that have had a wide migration are permanent in colour. All must acknowledge that there are many gradations. It is unnecessary to state that there are several races descended from our Caucasian stock that are nearly black. On the other hand we cannot but admit that there is a gradual approach of some of the African tribes to the Moors, of which the Foulahs and Mandingoes are examples. In fact a vast majority of men are found among the dark coloured races.

The colour of the skin derives its origin from a cuticle situated under the skin called the rete-mucosum—or the mucous coat of the skin—and is described by physiologists as a distinct layer : this is supposed to give brilliancy to the colours of many animals, such as the frog, the chameleon, the dolphin, and the goldfish. It consists of a fine texture of vessels containing fluids of different shades in the black and tawny races. In the whites this fluid is so light-coloured as not to affect the hues of the skin. In the Albino

negro it is altogether wanting. In the white hog, the skin is white, in a black one of the same litter it is dark ; where the animal is spotted, these different spots appear after the hair has been removed. Yet we have not made two species of the hog because they differed in colour. The ferret and English rabbit have produced albino varieties, which have been propagated for more than a hundred years ; the dark coloured fluid under the skin has given way to a white, transparent, and almost imperceptible fluid ; the animals are white, healthy and most prolific : we have not made new species of the ferret or the rabbit the rat or the mouse because they have produced permanent varieties that are white.

But it may be said, the negro is in his own country permanently black, and the examples you have produced are only accidental and unnatural varieties—albinos—show us races. We will endeavour to do so: in Piedmont the hogs when unmixed with other breeds are invariably black ; in Bavaria they are reddish brown ; the common hog of Carolina is naturally disposed to become black, (we have seen breeds in whole neighbourhoods that were nearly all black) the Chinese breed in Europe is black ; many races of horned cattle also are black—this is especially the case with the Welsh breed ;—and according to Col. Hamilton Smith, there is a white race of horses in Africa. We have not however ventured to make new species of hogs, cattle, or horses on account of their colours. A permanent variety of the Carolina fox squirrel is black—another belonging to the Northern gray squirrel is also of the same colour. The gray wolf becomes black in Florida, but we have not found sufficient characters to designate these varieties as new species on account of their black colour. Why then shall we regard colour as afford-

ing no distinctive marks in designating domesticated animals, and even some wild ones, and insist on this distinctive mark when applied to man? But it is said the negro has a crisped and woolly head, and no combing and no art can make it straight. It must, however, be observed that this covering of the African's head is not wool, nor bears any analogy to wool except in appearance, on the contrary it presents the characteristics of true hair: we have seen many families among the whites who through three generations had curled hair, and transmitted this peculiarity to their descendents: these we think would have resented it as an insult, if that on which they prided themselves as an ornament, would have been regarded as of sufficient importance to transform them into inferior species, or even exclude them from the Caucasian race. There is a breed of fowls called frizzled fowls, with feathers reverted—another covered with hairy feathers: you would not venture to make new species of these: why then would you make a new species of man because he possesses crisped hair?

There are many diseases too to which man is subject, but from which the brutes are exempt, such as measles, scarlatina, hooping-cough, etc., to which all the races of men are equally exposed. But our object only is to give a full synopsis of the subjects that should legitimately be examined in a scientific discussion; we shall therefore only enter into details, and produce our arguments more fully, under a few of the most important heads.

The discussion then we conceive is narrowed down to a single point. What constitutes a true species, and what are varieties? If man was a wild animal, restricted as most of the quadrupeds are to a particular geographical region, we would be obliged to examine him by the same rules which we apply to other animals in a wild state.

But as he is by the admission of all, a domestic animal, and in many countries a domesticated one also, whose geographical range extends over the world, we must examine him in regard to his varieties by the same rules which are to govern us in an examination of the various races of those animals that are brought under man's subjection. Hence it will be perceived that the opposers of the unity of the human race, instead of having established their theory, have scarcely commenced collecting the facts on which alone a theory can be founded. In order to arrive at satisfactory conclusions on this difficult subject we must, as we before stated, not only possess the skulls and examine the physiology of the various races of men, but we must examine the osteology, and physiology of the various races of animals, and more especially of those that are domesticated. The praiseworthy labours of Dr. Morton, whose *Crania Americana* gives us accurate delineations of the skulls of various races of men, especially the American races, are but the commencement of a long series of studies and physiological inquiries in reference to the mammalians in general, especially those subjected to domestication. From the great deficiency in anatomical-museums in our country we predict that the question is not likely to be settled in America. Even in Europe, their museums of comparative anatomy are very imperfect, those of Dresden, Berlin, and London being the best. Even there, however, scarcely anything has been done in collecting and arranging the skeletons of the various breeds of domesticated animals. In the examination, however, we were enabled to make of the living animals, as well as in the comparison of the various skulls which we were permitted to examine, our own views in regard to the origin of nearly all the races of domesticated

animals have been settled, and we entertain not a shadow of doubt, that when these investigations have been faithfully made, and the question in regard to the hybrids among the different species shall have been disposed of, the world of naturalists will decide that man is composed of only one species, with many, and constantly increasing varieties.

Nor should the advocates of the theory of the plurality of the races be regarded as authorities until they have arrived at some agreement among themselves of what are the species of men, affording us also those evidences which alone are satisfactory, that they possess the qualifications to become judges and dictators on a subject that requires so much knowledge of the structure of animals.

The greatest naturalists in all ages, however diversified may have been their views in regard to Christianity, regarded all the races of men as composed of one species. Among these were Linnæus, Leibnitz, Buffon, Schreber, Erxleben, Humboldt, Blumenbach, Cuvier, Owen, &c., the lights of the world, who studied all the departments of nature—formed our genera and species, and designated their characters. Our friend, Dr. Morton, whose superior qualifications are fully admitted, has not yet entered on the field of argument, and although he has intimated that his mind at present leans to the opposite side, yet, as he is still pursuing his researches, we still hope to rank him as one of the advocates of the doctrine of the unity of the human race. In the last American work on Zoology, by Professor Agassiz, this eminent naturalist, after expressing an opinion that many animals must have been created at several points of the same zone,—proceeds to say:—"Even man, although a cosmopolite, is subject in a certain sense to this law of limitation. While he is everywhere the one identical species, yet several races, marked by certain peculiarities of

features, are recognized, such as the Caucasian, Mongolian, and African races. And it is not a little remarkable that the abiding-places of these several races correspond very nearly with some of the great zoological regions.”*

And who are on the opposite side—Virey, who pronounces the negro “undoubtedly a distinct species from the beginning of the world,”† and divides mankind into two species, the white and the black, and suspects a certain fraternity between the Hottentot and the Baboon.—Desmoulin divided men into 11 species—Borey into 15, and Broc into several sub-genera, and an infinite number of species,—and finally an American, who can see no reason why we should not make an hundred species of men. There are no doubt others who have more recently entered into the field whose works we have not seen. The Frenchmen belonged to a school of skeptics of which Voltaire was at the head, and we may be allowed to suspect, that their minds might have been biassed by the cheerless doctrine which they had imbibed.

The American, whose seems recently to have laboured rather to deny the historical veracity of the Scriptures than to prove the diversity of the races, may perhaps claim the attention of the theologian; but having produced no new fact or argument to bear on the subject to which we are restricted in this purely scientific discussion, he requires no further notice. Be this as it may, the world of science has never admitted these gentlemen into their ranks as naturalists. Their names are utterly unknown among them—not one of them that we are aware of, has ever described a single animal, and it is evident that they were unacquainted with those characteristics on which genera and species are formed, hence they all disagree among themselves.

*Principles of Zoology. Agassiz & Gould. 1848.

†Extracted from the French of Virey, by G. H. Guenebault, p. 35.

The creation of the first human pair as well as that of all living animals and plants, it must be admitted by all who are not atheists, was a miraculous work of God. No combination of atoms, or any gradual elevation of lower animals into higher orders—according to the absurd theory of La Mark, who used arguments to show that the human race was derived from the monkey,—could ever have produced man in any other way than by miraculous power. If, then, other species of men had to be formed, suited to other climates, it would of course have required a similar miracle in this new creation. It is true, God was fully able to do this and infinitely more, but do we anywhere discover that he has ever resorted to these means where the same results are known to be produced by stamping on the race already created a constitutional power to produce these permanent varieties? It must be observed that it was not necessary to hurry these races into existence at an earlier day than that in which the different varieties progressively appeared and peopled the world. God might have created the first progenitors of our race millions of ages earlier than at the time when they actually appeared, and if he so constructed the human constitution that it would by its own organization be capable of producing varieties that were to become permanent in their characters, the effect would be produced by a natural process—varieties of men would be formed without a miracle. We all admit that the first pair of cow, of horse, of sheep, or of swine was a miraculous creation, but if it was a part of their nature to produce the endless varieties which we daily meet with, then surely the production of these varieties is not miraculous, but a natural operation. On the other hand the advocates of the plurality of the races generally contend that the various races of men were created

at different periods, as the earth was in a state to receive its inhabitants; they must therefore admit that each separate creation was a separate miracle.

That the Creator, at the first formation of the races of men, animals, and plants which now exist on our globe, intended these races to perpetuate themselves without any resort to miraculous creations afterwards, is sufficiently evident to the knowledge and experience of the world, even if we were destitute of those teachings of Scripture that enter into detail of the manner in which the races were preserved at the time of the flood, in order to "keep seed alive upon the earth." It would be well then to inquire whether we can produce one instance within the scope of man's knowledge that a single species of animal or plant has been brought into existence by a new creation, since this earth has been peopled by its present races of inhabitants? If an island or a continent were suddenly to rise up by a convulsion of nature, from the bosom of the Atlantic or Pacific, would God give either of them races of animals or plants by a new creation? We think not: they would be dependent for their supply on species now in existence, which would gradually adapt themselves to the climate. No new native animal, bird, or plant now exists in our land that can be proved did not exist here when our forefathers first took possession of the country. If new species have been described, they have been found in either the new and formerly unexplored parts of the country, or resulted from the closer investigations of naturalists. The soil which we have obtained from the bottom of a well, and therefore containing no seeds, and which was deposited on the house-top, remained for a time without vegetation; the first plants that sprung up were composed of those whose seeds were

covered by a light pappus or down that wafted them into the air—the *Erigeron canadense*, the *Solidagos*, and the thistle. But no plant made its appearance that was new, or whose history could not be traced to well-known species existing in the vicinity. If God, then, at different periods, since the creation of the races now in existence—we do not refer to former creations—formed different races of men to people different regions, he would have departed from laws which have been found uniform and unalterable during the memory of man, and all the teachings of history; and if God created all these different species of men simultaneously in various regions, it is evident that he departed from a law uniform in all the other departments of nature, in creating different species of men that by intermixture would produce other species—when in the other animals no two species would propagate another race.

The difference between the views we advocate and those of the opponents of this theory is, that theirs requires a separate miracle at the creation of every distinct race of men, and ours goes to prove that without a miraculous creation of these separate varieties the human constitution is so framed that varieties are perpetuated by a natural process throughout succeeding generations. These views will be strengthened when we are able to show most conclusively that man is not the only creature thus constituted, but that it is a general and universal law, applying to all quadrupeds and birds that have become, like man, domesticated and widely diffused; and that they exhibit in their structures, colours, and instincts as striking varieties as exist in the races of men.

But we possess still another mode of deciding the important inquiry in this discussion, between a true species and a variety, by a rule which we have found infallible in every

species we ever examined. From personal observation and the collection of all the facts which have for years been accumulating on our hands, we have been almost irresistibly led to the conclusion that two distinct species of animals are incapable by their organization of producing an intermediate prolific race. Did animals possess this power, then we would be obliged, at least in part, to adopt the theory of La Mark and others, which has been the subject of so much ridicule. In their wild state two different species have seldom produced hybrids, and we contend that we have no instance on record on which undoubted reliance can be placed, that these hybrids have ever perpetuated a race.

The following are our views in regard to hybridity:

1. There is, in addition to the difficulties presented by the difference of physical organization to an association of different species, a natural repugnance to that association; hence in most cases such an association is only produced by artificial means, by art or constraint.

2. That in nineteen out of twenty cases—and we might add, ninety-nine out of an hundred—where hybrids have been produced between two species, however closely or remotely allied, they have proved sterile.

3. In a very few cases, as in the mule of Virginia, and one or two others, where hybrids have produced, the progeny was feeble or deformed, and soon died.

4. That in a very few species a progeny has been produced that was incapable of propagating with the half-breeds,—in other words that the hybrid male was physically incapable of having offspring with a hybrid female; hence the latter had to resort to the full blood of either species, and thus the intermediate breed returned again to one or the other of the original species.

5. That in two or three species a progeny has been produced where the hybrids were fertile for a few generations, and then became sterile. We have no evidence on record, on which undoubted reliance can be placed, that any intermediate race has been produced and perpetuated by the admixture of two species, of either quadrupeds or birds.

And here we will join issue with the authorities quoted by S. G. Morton, M. D., in *Silliman's Journal*,* where we find two ingenious and elaborate articles, presenting all the facts which were then available on "Hybridity in animals, considered in reference to the question of the unity of the human species." These supposed facts he proposed to arrange and review. He respectfully solicits from practical observers any authenticated examples of an analogous kind. We feel confident that our highly esteemed correspondent and personal friend—to whom the world owes a large debt of gratitude for his researches and writings on Ethnography, Medicine, and the natural sciences—will not regard it as a violation of any of those ties which bind us to each other if the same facts which he has collected and arranged, are reviewed, and respectfully, but freely and fearlessly, commented on by another. In subjects like that now under consideration, and especially where we are dependent on the authority of others, we must not only be allowed to sift the evidence which has been produced, but seek from all sources, such information as will enable us to arrive at truth, the object of all our research.

The object of Dr. Morton's paper is to show from facts, "that different species of animals are capable of producing together a prolific hybrid offspring, therefore hybridity ceases to be a test of specific affiliation." "Consequently, the mere fact that the several races of mankind produce with

**Sil. Journal*, 1847, p. 49 and 403.

each other a more or less fertile progeny, constitutes in itself no proof of the unity of the human species."

We will endeavour now to offer our reasons and produce our facts to prove that several of his facts are not supported by competent authority, that others are disproved by naturalists of higher authority, and that when the statements contained in his papers have been so expurgated as to be freed from matters admitted on very doubtful authority, the result will prove that his facts militate against his theory, and go to maintain the views we have adopted after some sacrifice of time, and no small degree of labour.

The authorities mostly relied on for facts to prove the theory advocated by Dr. Morton is "Griffith's Animal Kingdom by Cuvier," as the work is called, and the names of Griffith, Cuvier, and Col. J. Hamilton Smith, are so constantly quoted as authorities, that without careful examination the reader might be led to conclude that the facts were certified by several authors. We are fully aware that Dr. Morton intended no more than to present fairly such facts as he supposed could be relied on, in favour of his theory, and we are thus far indebted to him for his industrious labours in collecting what has already been written on the subject, as it will more conveniently enable us to present an imposing array of facts on the other side. It must, however, be borne in mind that the voluminous work of Griffith was prepared by several authors—the names of Griffith, Smith, and Pigeon, appearing in the title-page. Cuvier's work was merely the basis on which theirs was arranged, and from which they often widely deviated on their own responsibilities. Cuvier, therefore, was not answerable for all the matter introduced into that production. Col. Smith prepared the synopsis on the species of mammalia, and affixed his name to many of the articles. He was also

the author of the *Natural History of the Equidæ*, so frequently quoted by Dr. Morton : "The *Natural History of the Dog* ;" as also of an article in the *Ethnological Journal*, recently quoted by Dr. Nott, in which an attempt is made to show that "fossilized human bones are found in company with those of extinct species of animals under circumstances that render it extremely probable that they were cotemporary," and the writer remarks that he (Smith) "controverts the hasty opinions of Cuvier, and unsettles all previous conclusions on this point," and then adds, that the most important human fossil is that found by Mr. Dickeson, near Vicksburg." If this could be proved, then it would be seen that races of men had existed before the days of Adam, and hence the Mosaic chronology would evidently be false. We would in this latter connection digress for a moment, and briefly state the results to which all geologists of any reputation have arrived in regard to these pretended fossils.

1. That there is not in any museum or any private collection in the world a single human fossil that can be traced to any of the older formations.

2. That the skeleton found on the cliffs of Guadaloupe, one portion of which is deposited in the British Museum, and another in Charleston, which was for a time regarded as one of the wonders of the world, has been proved by Professor Moultrie, of Charleston, and Owen, and others, of London, to be of very modern origin—not more than 120 years old—and that this, together with a similar one in the Museum at Paris, were imbedded in rock, composed of consolidated sand and comminuted shells, and corals of species now inhabiting the adjacent seas. The reader is referred to the first volume of Mantel's *wonders of Geology*, p. 88-9, for a full account with engravings of these skele-

tons, as well as of the recent cliffs of limestone in which they were found imbedded.

3. That the specimen submitted to the American Association, and characterized as "what is perhaps the most important human fossil yet discovered," is of modern origin. We were present at one of the meetings where this pelvis was submitted to the society for examination. Dr. Dickeson, an intelligent young geologist, simply presented the specimen, which had been discovered by another individual who had picked it up in a ravine about 6 miles from Natchez. In Lyell's *Second Visit to the United States*, p. 151, we have an account of this bone. He decided that "it was a portion of the skeleton of a modern Indian that had been dislodged from some old Indian grave from the cliffs above, and fallen into the ravine beneath. It was stained black as if imbedded in a peat or vegetable soil." We cannot but conclude from hence that men must be strongly wedded to a theory, who, whilst they are in possession, as far as we are informed, of the unanimous opinion of the most learned geologists, deliberately again venture to reproduce these exploded errors.

Returning to Col. Hamilton Smith, it will be perceived that nearly all the facts collected by Dr. M. that are most important in this discussion, have been derived from one source, as the same individual has been the author of the several books, so frequently quoted under different titles. He was for some time labouring to unsettle the public mind in regard to the origin of the various species of domesticated animals, endeavouring to account for the varieties in the several species on the bare supposition, without any reliable proofs, that the ancients might have subjected various species of animals to domestication, the originals of which still exist in a wild state, but which

as far as has been tested, have been found either untamable or incapable of domestication for any useful purpose. Nevertheless, that these had been brought under subjection. Then by another process the hybrids of these separate species had been associated, and had produced fertile intermediate breeds, and in this way the varieties of horses, cattle, sheep, goats, swine, dogs, cats, and poultry, had originated. When, however, these original species are now brought together in a state of confinement their hybrids are either mules, and incapable of procreation, or they can only be made to produce with the original species; and hence return to the primitive stock, and have never perpetuated an intermediate breed. After having been for a time engaged in creating doubt in the public mind on these subjects, he has at last endeavoured to show from fossil remains, that men must have existed before the days of Adam; hence the generally received christian chronology was not to be relied on.

However unpleasant may be the task, yet the duty seems to be impressed on naturalists to examine into the qualifications of a gentleman who has constituted himself as a judge in a matter of such great moment, and who is engaged in an attempt at overturning the deliberate decisions of the greatest naturalists in every age of the world. We are far from believing that he would designedly mislead the public mind, but it may reasonably be inquired whether the theory he has sought to establish may not have influenced his judgment, and given rise to the conjectures, speculations, and doubts on the origin of our domestic animals which are everywhere scattered throughout his voluminous writings. These, as it is now seen, are quoted by others as authority. In this way errors gradually creep into the public mind which in time become per-

petuated. Lieut. Col. Smith travelled through many countries, and among others through North and South America. He made very creditable sketches of some of the animals of America. Both in this country and on the eastern continent he has evidenced a disposition to elevate mere varieties into species. The genus *Equus* he divides into three sub-genera, and fifteen species, and four hybrids.

* The common horse he divides into six species, one of which he marks as doubtful. To the piebald horse he gives the name of *Equus varius*—another *E. hippagrus*, etc. He might on the same principle have increased his list to an hundred species. He has given us four species of ass, and five of zebra, with figures that on the whole are characteristic, and form the most valuable part of the work. We are fully aware, from painful experience, of the difficulties naturalists have to encounter in deciding from imperfect specimens on species, as well as on those varieties which are found in a domesticated state. But naturalists who look for precision in description, and satisfactory reasons for the conclusions at which an author has arrived, can scarcely fail to observe that, there are, in all Col. Smith's writings, evidences of a want of decision, of an indulgence in conjecture, and of a disposition to build new theories upon mere speculation, without a proper regard to facts. If it should, therefore, be made to appear that the authority on which very many important facts in Dr. Morton's paper are based, is of a very questionable character, we cannot but admit that the doctrine of the unity of the human species has not been affected by the article on hybridity.

We will now proceed to examine, in detail, the evidences presented in favor of the theory of fertility in hybrids.

EQUINE HYBRIDS.—Dr. M., admitting the well-established

* *Equidæ*, p. 350.

fact that the progeny between the horse and ass begins and terminates with the hybrid, still conceives that the result depends much on temperature. He refers to a remark of De la Malle—who quotes Columella—who admitting that such an event was a prodigy in Greece, yet says that it had been remarked by Mago, a Carthaginian agriculturist, that in his country the fecundity of the mule was a frequent event, and that these mules did not cross again with each other, but only with the primitive species. Columella wrote 44 years after the birth of Christ, consequently the world has had more than 1800 years to verify the report of Mago. We have two instances of this kind on record in America, as far as we can recollect, one in Virginia, and one in Mexico. We have read of one case in Spain, one in Scotland, and one in Egypt. In nearly all these cases the foals were too feeble to live. We doubt whether these phenomena occur more frequently in warm than in cold climates. Even admitting, however, the whole story of Mago, no new race could, by his own account, be produced, as these hybrids would only breed with the original species; hence they became either mules or horses.

We are aware that after infinite trouble hybrids have been produced between the ass and the zebra—we have seen one of these ;—when the zebra, however, conceived by a horse, it died in the eighth month. We admit, also, that there was a product between an Arabian mare and a quagga (*E. quacha*.) All these mules proved to be sterile. The female hybrid zebra mule was long preserved in Paris, and although in fine health evidenced a state of organic inability to continue the race.

But Dr. M. informs us that the ass is not the proximate species of the genus *Equus*, when compared with the horse; but that place is held, as Cuvier remarks, by the Djiggetai

of Asia (*Equus hemionus*) and that until this experiment has been fairly tried we cannot speak with absolute certainty of the extent of productiveness of Equine mules. The *E. hemionus*, which we have examined and compared, is in reality not a horse, but another species of ass, as admitted, and so characterized by Col. Smith himself.* It has long ears, a long tail like a cow, with a tuft at the end, and even differs in dentition from the whole genus, having two teeth less than the other species. Smith supposes, that by producing cross breeds with the Quagga and the two or three Dauws "an improved Austral horse may be attainable." We confess, that to us these appear to be strange, heterogeneous materials from which an Austral horse may be manufactured. We doubt, moreover, whether on close examination the *Equus hemionus* will be found to hold a nearer relation to the horse than does the ass : indeed, by its dentition, it is further removed, and the figure, as given by Smith, although only a copy—and we have seen another more characteristic—is still sufficiently true to nature not to mislead us in regard to its true position in the genus. That it can never be made to produce a fertile hybrid with the horse we feel very confident in asserting, after having made a careful examination of its structure. We have not a single instance on record that a prolific cross has been produced between this animal and the horse, although both animals exist in Tartary, Thibet, and the Himalayas. We have scarcely the shadow of an evidence that it has in any age been domesticated. The speculations of Hamilton Smith† on the 21st chap. and 7th verse of Isaiah, where we read of a chariot drawn by asses, and the assertion of Herodotus that the Medes used wild asses to draw

* *Asinus hemionus*, H. Smith, p. 317.

† Introduction Equidae, p. 110.

their war chariots, and the supposition that these asses belonged to this species, are really so trivial and so far-fetched, that they demand no further notice than the mere mention of the general belief that the ass referred to in Isaiah was the common ass—and the wild ass of Herodotus was the Onegar, the original of the domestic breed which has always been designated as the wild ass. His remark that Mr. Duvancal saw one of this species (p. 330) domesticated, and labouring with the asses at Lucknow, if even the account can be relied on, is no evidence that the species can be domesticated for any practical purpose. We saw a pair of American Moose Deer, (*Cervus Canadensis*) harnessed to a sleigh; the race, however, is not therefore domesticated. The Monguls and the Tungooses hunt this animal for the purpose of eating its flesh. Pallas represents its indomitable character as such that it cannot be tamed. Although we do not fully agree with Pallas in this, and on the contrary believe that with suitable attention any wild animal may be brought under a certain subjection, yet we are far from believing that this species, or the zebra either, can ever be domesticated so as to be rendered of any practical benefit. Like the zebra it is restless in a state of captivity, and, however kindly treated, seizes every opportunity of giving the bystander a sudden gripe with its teeth, and in the next moment handing him its heels without further ceremony.

We must here record our dissent from the views of Col. Smith* in regard to “the fact of the quaggas themselves being of remote hybrid descent.” These views are in opposition to all our past experience in regard to new races being produced in a wild state by an admixture of two species. Besides we may reasonably inquire what two species

* Equus, p. 342.

have produced the quaggas. ? If we are directed to the only source, viz: the horse and the zebra, from which such a race could by any possibility spring; we answer, the experiment has been frequently made, and with all the domestication and ingenuity of men there has yet been no individual brought alive into the world, and if this even should be the case, we have no doubt of its proving a sterile mule.

Since then the horse could not have sprung from any mixture of the breeds of asses and zebras,—and Col. Smith himself seems virtually to have nearly abandoned this position—he flies to the last resort. The horse, he conjectures, may have had several primitive stocks, some of which are still existing in a wild state. Although we are inclined to agree with Foster and Pallas, that all the wild horses of the Eastern Continent, roaming from the Ukraine in Europe to Tartary, are descended, like those in America, from breeds escaped from domestication,—as evidenced by their diversities of colour,—we still admit that they may not have departed from the original type. He has given us figures of some of these various breeds, taken, as far as we should judge, in every instance, not from the wild, but domesticated races, and is withal exceedingly perplexed in grouping his varieties under their several 5 or 6 original stocks; and to our mind there is a greater difficulty in accounting for his varieties under the several races, than there would be in referring them all to one original stock.

On the whole, after carefully reading the work on the *Equidæ* of Col. Smith—in which we have been interested and amused—all the facts which he has so industriously collected, and all the conjectures and speculations in which he has allowed himself to indulge, have only tended to strengthen our previous convictions.

1. That by no process of domestication has a new intermediate race ever been, or ever can be, produced between the horse and either of the other species of asses and zebras. No race of horses has ever arisen with asses' ears, and tails resembling that of the cow—and no asses have appeared in all their varieties, with the characteristics of the horse.

2. That those who advocate the doctrine that our varieties of horse have sprung from several primitive stocks, and on whom the onus of indicating the species rests, have afforded us no proofs of their theory; whilst the varieties that have sprung up within the memory of man, even in America, (which it is known has derived all its horses from the Eastern continent,) confirm our views in the belief that all the varieties of the horse have originated within themselves, and must be referred to one primitive stock, *Equus caballus*—of Linnæus, Buffon, Cuvier, and the most eminent naturalists of every age and country.

BOVINE HYBRIDS. Under this head a reference is made to Griffith's Cuvier,* to show that it is extremely doubtful whether the varieties of domesticated cattle are derived from the same species. Hamilton Smith, who is the writer of the article, remarks, "An opinion has lately been started that the hunched varieties of cattle are derived from a different species, against which no conclusive objection can be well made; when it is considered that the Gambia or Gayal produces a mixed race with the domestic Taurine; and the Yak of Tartary, and even the American Bison, are equally reported to copulate with that species, notwithstanding the anatomical differences, and that the times of gestation are not similar." Morton says it corresponds in its osteological structure with a fossil species (*Bos urus*) found throughout Europe: it is extremely doubtful whether

* Vol. 4, p. 419.

all the modifications now familiar to men are derived from this species. There is no evidence that any species of quadruped in a fossil state exists in our present creation, and we, therefore, leave *Bos urus* among the fossils. Our domesticated breeds of cattle were referred by Linnæus, with all their varieties, not to *Bos urus*, but *Bos taurus*.^{*} Gmelin, his successor, entered into detail, and designated the most marked varieties. Cuvier also states that "it is an error that the stock of our wild cattle is descended from *Bos urus*," and refers the numberless domestic varieties to *Bos taurus*. Even Hamilton Smith[†] says the same, notwithstanding the doubts above expressed, and finally in the text,[‡] he unites the modern *bos urus* with the *bos taurus*, the domestic ox, as having the same characters varied by circumstances.

In regard to the hybrids produced by mating two original species of this genus, the case of the buffalo of America, to which Dr. Morton in his article refers, may serve as an indication of the operations of nature in some of the other species. The buffalo produces a hybrid with the common cow and vice versa. This hybrid will not produce with another hybrid, but with either of the original species; hence it returns to one or the other of the original stock, and becomes either a buffalo or one of the races of domesticated cattle; hence no intermediate species is perpetuated.

In an interesting letter in our possession, recently received from Col. Wicliffe, of Kentucky, who has reared the buffalo for 30 years, we have condensed the result of his experience in breeding the cross between the buffalo and common cow. He says, "the tame or common bull

^{*} Linn. 12th ed., p. 98.

[†] See Griffith's Cuv., vol. 4., p. 418.

[‡] Synopsis of the species of mammalia, vol. 5, p. 376.

would not mate with the buffalo cow, but the buffalo bull produced with the common cow. The male hybrids were sterile, the female hybrid produced, either from the common or the buffalo bull, but not with a hybrid."

BOVINE AND CERVINE HYBRIDS.—Under this head Dr. Morton uses the following language. "The Baron Larrey incidentally mentions in his memoirs the following circumstance that occurred during his residence at the Bay de Oroc, in Newfoundland. The carabou (*Cervus wapati*) sometimes comes near the houses. In the night one of them broke into our sheep-fold, where we had a cow that became pregnant by him. She, no doubt, produced a mongrel; but I lost the opportunity of ascertaining the fact, because she was taken back to Brest."* Dr. Morton adds, "I see no reason to question any part of this statement, which ceases to astonish us, when we regard the many analogous phenomena that are now fully authenticated, etc."

We confess we see great reason to question this statement, and in the name of a science that requires such accuracy and investigation, we protest against it.

Without stopping to inquire what species of deer the Baron heard of, for it was night, and he, therefore, could not well see it, or to state that *Cervus wapati*, the name applied to the Western elk, is not found within a thousand miles of Newfoundland, we will presume it was either the American rein deer (*Cervus hastalis, agassiz*), which the Canadians sometimes call carabou, or the moose (*Alees Americanus, Jardine*), the only two species of deer in Newfoundland. Even in a state of domestication, two species of animals cannot be induced to approach each other, although in the rutting season, without great difficulty. The salacious mare must be blindfolded or she will not receive the

* Memoirs of Military surgery.

ass. The female zebra brought from the Cape by Lord Clive, refused to admit either the horse or the ass, and they could not succeed till they painted the ass with stripes to resemble the zebra; and Buffon, who had raised puppies of the wolf, the fox, and dog together, to familiarize them with each other, found when they were in heat the females exhibiting such a repugnance to the male of the other species, that mortal combats ensued. Col. Wicliffe states that the common cow refused the buffalo bull, although they had herded together. This wild buck of the Baron's must have created a terrible commotion in the sheep-fold in the dead of the night, and if the cow was, indeed, submissive, so contrary to all experience in such matters, it was somewhat strange that the Baron never afterwards inquired whether she might not have previously received a common bull, or whether she had been impregnated at all. Even, however, if the Baron's suspicions had all been verified, it would not affect our argument, for it would have been necessary to prove that the progeny of this cow and reindeer or moose had, in its turn, copulated with another half blood, and produced a new race of Bovine cervians.

BOVINE AND OVINE HYBRIDS.—A statement in Brande's dictionary is referred to by Dr. Morton, where a mule had been obtained between a bull and a sheep. He adds that "it is a statement that claims our entire credence, from the circumstance that the physiological part of the work in which it is contained, is from the pen of Prof. Owen of the Royal College of Surgeons." That Owen personally had any knowledge of the fact, or whether he merely depended on the authority of others who were deceived, we are not informed. The facts, however, even if authenticated, would not prove that a race had been perpetuated by this unnatural association. We remember once having

travelled ten miles out of our road to see a similar prodigy, which was the subject of much speculation and wonder in the neighbourhood. It proved, however, to have been a large ram with a hairy fleece, and rather straight horns.

The deliberate opinion, however, of our friend, Professor Owen,—who is, unquestionably, one of the very best comparative anatomists and physiologists of this or any other age, and who has during his whole life enjoyed advantages from his position at the College of Surgeons, the Zoological, and other societies, to inform himself on subjects which he has made his particular study,—is of infinitely greater value than the combined speculations of all the authors that have been quoted in regard to hybridity. He says, in the very article quoted by Dr. M. :—"The tendency of all the natural phenomena relating to hybridity is to prevent its taking place ; and when it has occurred, to arrest the propagation of varieties so produced, and to limit their generative powers so as to admit only of reversion to the original specific forms, the individuals of different species do not voluntarily copulate."

"In a few exceptionable cases, serving only to establish the rule of their inferiority, specific hybrids have been known to propagate together and produce a degenerate intermediate race, which soon becomes extinct ; it more commonly happens that a hybrid is sterile, or propagates only with an individual of pure breed."

CERVINE HYBRIDS.—Dr. M. mentions one example, that of the "cervus axis, with the porcine species, thus giving rise to the well-known intermediate stock, called the spotted hog-deer." We confess, that believing all authors regarded the spotted hog-deer as a mere variety of the axis, we made no personal examinations on the subject ; if we were misled, it was probably by Hamilton Smith himself, who sets it

down as a variety.* See also another account of this by the same author.† He gives another species, the brown porcine axis,‡ and questions whether it is not also a variety, as the animal is rare ; and finally adds another from the fragment of a frontal, with whitish miniature antlers, to which, if it should be a species, he gives the name of dwarf axis (*C. pumilio*.)

CAPRINE HYBRIDS.—Dr. M. mentions the fact as derived from Col. Smith, that the wild goat (*C. ægagrus*) produces a fertile progeny with the common goat (*capra hircus*.) All authors that we have consulted, including Hamilton Smith himself,|| regard the *capra ægagrus* as the origin of all the varieties of our domesticated goat. It is not therefore surprising that they should have a prolific offspring.

He also mentions that the ibex as well as the chamois (*Antelope rupicapra*) had produced with the common goat. We have on record, as far as we can recollect, one instance where a chamois produced a hybrid with the common goat—and one or two between the ibex and goat, but as we have heard no further results, we may reasonably conclude that these hybrids, in accordance with the usual laws of nature, were sterile.

OVINE HYBRIDS.—On this head Dr. Morton mentions that it has been ascertained that there are several species of wild sheep (*Ovis musmon*, *O. ammon*, and *O. pygargus*), which is admitted, and which we have not doubted, and to which we would add *O. Americanus*. He then adds, “The common sheep, called in the systems *O. Aries*, is generally classed as a variety of the first-named species ; but recent investigations render it more than probable that several wild species have commingled to form the numerous culti-

*Synopsis, Griffith Cuv. p. 312.

†Griff. Animal Kingdom, vol. 4th, p. 119.

‡P. 119-121.

||Synopsis, Griff. Animal Kingdom, p. 357.

vated races." He then quotes as authorities, Hamilton Smith and Mr. Blythe. In the proceedings of the Zoological Society for 1840,* an abstract is given of Mr. Blythe's paper on the genus *Ovis*, which, we believe, is all that was published. He had examined the horns and the various wild sheep in the London collections which we had also previously investigated. His object was to show that *Ovis ammon* of the Eastern Continent had passed through Kamtschatka to the Rocky Mountains, and was there met by another species from California, described by Douglas; the latter species has since been rejected. He then proposed a new species which he designated by the name of *O. Sculptorum*. He brought to the notice of the Society an animal from the Rocky Mountains, of which a mutilated skin exists in the Zoological Museum, named by Ogilby, *Ixalus probaton*, which although it was then, and is now, considered as the female of a well-known species of another genus, he regarded as a true sheep. He made nine species of sheep; yet although his speculations were somewhat extravagant, we must do him the justice to state that he did not consider that the several wild species had commingled to form the numerous cultivated races. On the contrary, it is distinctly stated by Mr. Blythe, that he "considered *Ovis aries* a species *per se*, and not descended from the moufflon." We are then once more thrown upon Hamilton Smith as our only authority. It is not necessary in support of our position to prove that our common sheep (*Ovis aries*) has descended from the moufflon. It must be admitted, however, that all the wild species of the genus *Ovis* bear so striking a resemblance to each other that naturalists until very recently regarded them as mere varieties of one species. We have adopted the belief that the moufflon (*O. musmon*) is

* P. 12.

the origin of our sheep. Besides our personal comparison of the species, the account given of it by the Prince of Musignano,* of their easy domestication; their breeding with the ordinary sheep, exhibiting all their peculiarities, is a strong confirmation of this opinion, so long entertained by naturalists. It remains for our opponents, however, to prove that our different varieties of sheep have been derived from commingled species. This, they cannot do, they cannot even show, that in a wild state they have ever commingled, or that a single species except *O. musmon* has ever submitted to the restraints of domestication.

OVINE AND CAPRINE HYBRIDS.—Dr. Morton mentions the opinion of the ancient Romans, that all the varieties of the domestic sheep, were a mixed offspring of the sheep and wild goat, together with the views of Pallas,—errors which we supposed, had long since been set at rest, by the fact that on the mountains of Switzerland, on the Alps, in Bohemia and Hungary the sheep and goats have for ages been kept together in the same flock, under the same shepherds, where we have often seen them, and yet not a single instance that we have ever heard of has occurred where these species produced a mixed progeny. He however is desirous of strengthening his argument by quoting from a French traveller by the name of Chevreul, who states that in Chili their fine wool is derived in the following manner: “a single goat was placed with six ewes, and male hybrids were produced with a hairy fleece which was little esteemed for the particular purpose for which it was designed. But, by coupling these male hybrids with ewes, the latter were fruitful and their offspring bore a fine soft fleece.” The journal *Des Savants*, in which these crudities are published, has not reached us,

* *Capra musmon*. Bonaparte *Ichographie*.

and as the author himself states that in order to keep up the breed they must resort to the original stock, and thus nature prevents the creation of a new race, it is unnecessary for our argument to hunt up and comment on the authority: if, however, all that this author has published in reference to improving the fleece of the sheep by an admixture with the common goat be true, it might be well for us in the United States to profit by the hint. We are in the same latitude with Chili on the southern side—we are abundantly supplied with the sheep and the goat. Although the sheep's wool might not be improved by the admixture, we might improve the hair of the goat, which is at present of no value. By reversing the experiment therefore, and placing a single ram with six she goats we might in time give to all our now worthless goats a valuable fleece, remove from the animal its somewhat unpleasant odour, and impart to the flesh a little more of the flavour of *Ovis* and less of *Capra*.

CERVINE AND OVINE HYBRID.—Under this head we have an account of a fertile progeny between a Finland ram and a Sardinian doe, where by successive crossing with the original sheep it finally assumed all its characteristics. Rudolphi Beyträge zur Anthropologie is quoted as authority, who in his turn quotes old Hellenius. Whether Hellenius saw it we are not informed, as we have not the work of Rudolphi. The Sardinian doe, however, must have been the European fallow deer (*Cervus dama*) as we know of no other deer in Sardinia, that goes by that name, and the ram, one of the varieties of the common sheep. These both have existed for many centuries in the fields and parks of Europe, and if the deer could be converted by this process into a sheep, we would very probably have long since heard of it, and would not now be obliged to fol-

low the tracks of Rudolphi, in hunting for the ghost of Hel-
lenius in Sardinia. There is always a difficulty in investi-
gating facts certified by writers who refer us to distant, and
little known countries.

CAMELINE HYBRIDS.—Under this head we are informed :
“The two species of camel, *C. bactrianus* and *C. dromedarus*,
produce with each other an intermediate offspring, which is
said to be fertile without limit, etc.” Cuvier’s *Regne ani-
mal** is the only work referred to as authority. It must be
recollected, however, and was so intended by Dr. Morton,
that Cuvier is only responsible for considering them as two
species, and says nothing of their producing an intermediate
offspring. Buffon and many others regarded them as only
varieties of the same species. Hamilton Smith† says, “it
must be admitted, that without the difference of the hunches
there are scarcely sufficient characters to distinguish them.”
He also gives an account of a number of varieties of the
camel. He, however, gives both species in his synopsis,
and is under the impression that they do not breed together,
as he seems to doubt‡ whether we could “show the inter-
mediate breed proceeding from the commixture of the two
species,” and in the supplement to *Pachydomata*,§ either
Griffith or Hamilton Smith himself, says of the camels,
“These species will couple and produce, but notwithstanding
this circumstance, and notwithstanding all the advan-
tages afforded by domestication for the development of
certain parts, and the formation of varieties, these species
have never yet been converted into each other. The indi-
viduals produced from the connection remain always the
same, and never reproduce.” The camels are seldom pro-
lific in Europe, hence the difficulty among naturalists in

* Vol. 1, p. 187.

† Griff. Anim. Kingd., vol. 4, p. 47.

‡ Vol. 4, p. 47. § Griff. Anim. Kingd., vol 3, p. 423.

deciding this point satisfactorily, and as a domesticated animal it is at the same time not easy to decide, whether there are two distinct species or only varieties, or whether, if two species, the hybrids may not be sterile when they associate among themselves, and produce with only one or the other of the original species.

CANINE HYBRIDS.—Under this head, Dr. Morton says, "Is it proved that all the domestic dogs are really derived from the same species? Here again we appeal to one of the latest and best authorities on this question—Charles Hamilton Smith, whose laborious researches led him to the following conclusions : that the parents of our domestic dogs are derived from several distinct species which were constituted with faculties to intermix, and thus to produce the interminable varieties familiar to man ; that 5 of these types belong to the old world alone, viz : the wolf, the anthus, the dingo, and the jackal ; and that a d'hole or a thus may have been the progenitor of the gray hound ; and that the origin of the primitive mastiff may yet be traced to a lost or undiscovered species belonging to the hyena tribe."

This convenient mode of accounting for the origin of a species on the supposition that the original types have been lost is frequently resorted to by Col. Hamilton Smith. If a domesticated bears the slightest resemblance to a wild species, the latter is immediately set down as the parent of the whole race. If no traces of it can be found, the fact of the changes which domestication may have produced is overlooked in searching for some lost, or yet undiscovered, species. But let us take a hasty glance at the several species referred to as the origin of our dogs. In doing this, however, we cannot but observe that Dr. Morton's language, that the investigations of Smith had led him to the above conclusion, is rather too strong. He, on the contrary, speaks with very

great caution. He says, "we are inclined to lean for the present to the conjecture," etc. Now we submit to our respected friend whether "inclining to lean for the present to a conjecture," implies being led to a conclusion. In fact it behoved Col. Smith to speak with caution, for he had snappish races to deal with: the canines on the one side, and the naturalists on the other. The former refusing to claim kindred with the buansu, the anthus, the d'hole and the jackal, and even growling at the wolf, and the latter clamorous for more and better proof.

We agree with Cuvier, that in its habits and physical developments the large European wolf (*Canis lupus*) bears a close relation to the dog. It is more extensively diffused than any other known animal, and may have therefore preceded man in his wide migrations. It is subject even in its wild state to run into many varieties, both in form and colour. Dr. Morton mentions a fact, that a wolf in Pennsylvania had been taken when young, and trained to deer-hunting; this wolf had produced a mixed breed with the dog. Whether these hybrids were productive among themselves, had not yet been ascertained. We recollect an instance in Carolina, where a wolf had been similarly trained. Mr. Blacket, of England,* regarding the wolf as the parent stock, speaks of the ease with which the pups from the wolf may be domesticated, and become as familiar and attached to their master as the common dog. And Bell† is also inclined to conclude that the wolf is the original species from whence our domesticated dogs are derived.

Although it is not necessary to our argument that we be obliged to point out the particular species of wild animals from which the dog has sprung, it would be interesting to trace this connection. Whilst he bears a very strong simi-

*Proc'd. of the Zool. Soc. 1841.

†Penny Cyclopaedia.

larity to the wolf, there are, it must be admitted, some peculiarities by which he appears to be separated. The eye of the dog in all its varieties has a circular pupil, but in the wolf the position of the pupil is oblique. There is also a dissimilarity in the curve of the tail. There is, moreover, a difference in voice which has always enabled us, even in the forest and at night, to distinguish between the howl of the wolf and the barking of the dog. We have also observed that the wolf, although thoroughly tamed, did not evidence all the docile traits of the dog. Although born in domestication, it usually when at liberty, soon returned to the forest. It seems under all circumstances to associate with some repugnance with the dog, and even when reared with hounds, we have been informed on good authority, that on a deer-hunt, it will stray away from the pack, and hunt for its own benefit. Notwithstanding all that has been advanced by naturalists of the fertile hybrids produced by an association of the dog with the wolf, we are aware of the difficulty of making a satisfactory experiment unless the animals are excluded from an association with all others, which is a matter attended with difficulty.

Although the dog follows the tracks of the wolf at first with great reluctance, yet he is often trained to hunt him, and in time a pack of dogs follows the wolf as eagerly as it would a fox ; it is true, the dog can also be trained to hunt any other dogs. We are not aware that wolves in their wild state devour each other, although like porpoises (*Delphinus*) at sea, they may on an emergency prey upon a weak or wounded companion; we know however that wolves seize upon the dog and devour him. Richardson states, that they were constantly prowling around his camp in the polar regions to capture the Indian dogs. Notwithstanding all these difficulties, and we confess we are not free from some

doubts in regard to their identity, if we were called upon to decide on any wild species as the progenitor of our dogs, we would, from the similarity in the conformation of the two, sooner fix upon the large wolf than on any other dog, hyena, or jackal ; and certainly sooner on him than on any supposed mixture of all these species combined.

The buansu we suppose to be the *Canis primævous*, of Hodgson, and the dingo, the *Canis Australiae*, of New Holland. With the former we are unacquainted, but have heard doubts expressed, whether it was not one of the packs of feral dogs, of which there are several varieties. The dingo is asserted by French naturalists to be of the same character. We were strongly inclined to adopt this opinion on observing in the Zoological Gardens, that the young of the first generation were of different colours.

The experiments made in Paris and New Holland to obtain a hybrid between the common dog and dingo, are said to have failed. More recently, Mr. Cunningham mentions, that in New Holland they now have produced a mixed breed with the common dog ; none of the particulars, however, have been given, and we know nothing of the extent of their fertility. It will not, however, be contended that Europe, or Asia either, had to resort to that terra incognita, New Holland, for any race of their dogs.

The *Canis anthus*, as Prof. Kretchmer and Ruppel supposed, may possibly prove the original dog, but we have no evidence of this, and even should it be proved, we would have another difficulty, in deciding which of the varieties were derived from it. The jackals, we think, would scarcely be acknowledged as kindred by any variety of dog. They are so offensive that Griffith remarks, "the presence of a single jackal would be sufficient to poison a whole habitation." The d'hole is one of the species indicated by Col.

Smith ; its history however is still involved in great obscurity. The hyenas ought scarcely to be claimed as the origin of any variety of our dogs. They have a glaudulous pouch at the anus with only four teats and differ from the dogs in having two teeth less than in that genus.

Dr. Morton states, that the "*canis venatica* of Burchel connects the dog with the hyena almost without an interval." We have examined and compared that species; it is figured by Col. Hamilton Smith himself, in Griffith's *Animal Kingdom*,* and again in the *Naturalist's library*.† We confess we see a wide interval between this species and the dog, and cannot perceive any links in the chain by which they are connected. Besides it differs from the dog in having but four toes on each foot, whilst *canis* has five. It differs also in an important organic structure. Burchel says, "*Mos eorum copulandi mos canum non est, u. d.*" Dr. Morton has said, on the authority of Col. Smith, that the greatest number of *mammæ* in the common dogs is ten, and the smallest number is six, and from thence they would prove that there must be an admixture of species because the wild species has the *mammæ* in pairs; and here they would derive the dog, with from six to ten *mammæ*, from the hyena that has but four, and differs materially in dental and organic structure. Besides Burchel asserts that this wild hyena which bites off the tails of cattle at the Cape is perfectly untameable. He says, "repeated attempts have been made by the Cape colonists to tame the young whelps occasionally taken or found abandoned, but always without success, their ferocity increasing with their growth till it was found necessary

*Griff. Anim. Kingd. vol. 2nd, p 376.

† P. 266, p. 24.

to kill them." The statement by M. de Lalande and Burchel of the ferocity and untameable disposition of this animal is republished by Col. Smith himself.*

It is from this heterogeneous collection of hyenas and jackals, not one of which has been domesticated, and of wild dogs which either may or may not have been originally wild, none of which resemble any breed of dogs now in existence, that Col. Smith proposes to manufacture our various races of dogs. And by what process is this to be effected? First, a jackal, hyena, a wolf, or a wild dog is to be reclaimed from the forest, and domesticated. We have no satisfactory proof that this ever has been, or can be done. Next, another species must be domesticated somewhere else. Then the offspring of the two must be brought together to form a fertile hybrid race. If this succeeds, and it has not yet been proved, the next difficulty that lies in the way is to show what will be the product of this hybrid, since it will be very apt to resemble either one or the other of the parents; but as yet we have nothing to resemble any varieties of our dog. We have no terriers, gray-hounds, harriers, or bull dogs. What must be done in this dilemma? We must wait till these varieties spring up in the course of time, from this admixture of various breeds.

We now submit the two theories, that of Smith, "that the parents of our domestic dogs are derived from several distinct species, (the wolf, buansu, anthus, dingo, jackal, d'hole, and thus) which were constituted with faculties to intermix, and thus to produce the interminable varieties familiar to man," and our theory; that our domestic dogs were derived from one original species which was constituted with faculties to produce those varieties that are familiar to man.

* Nat. Libry, vol. 5, p. 267.

Our friend, Dr. Morton, under this head, seems disposed to fasten upon the opponents of his theory the charge of advocating La Mark's absurd notions on the progressive transmutation of species, and very significantly inquires, "If education and domesticity can so vary not only the instincts, but the very proportions of anatomical structure in dogs, do we not realize in the theory of La Mark a law of nature which would with equal readiness explain the unlimited transmutation of species into each other." He will, however, bear in mind that by our theory we are only producing varieties from the dog himself—*here* the dog begets a dog; but by his it requires the combined effort of the several species of d'hole, jackal, wolf, and hyena, to make a dog, and a mixture of four species of wild ass to make "an improved austral horse." We are inclined to think that La Mark would reject us as heterodox, and welcome our opponents into his family of true believers.

Dr. Morton says :—"the wolf, the jackal, and the fox, all intermix with each other ; so does the common jackal with the jackal of Senegal"—"it is certain, therefore, that dissimilar species of the dog tribe are capable of producing a fertile hybrid offspring."

We are disposed to believe that these assertions are hazarded with too great a degree of confidence. Naturalists have not yet possessed opportunities of verifying this as a fact by a series of well-conducted and satisfactory experiments.

And here again we bring to our assistance, the profound knowledge, minute investigation, and close reasoning of our friend, Prof. Owen, who has rendered himself familiar with every process in these experiments. He says :—"On the assumption that a hybrid produced by two individuals of undoubtedly distinct species, is sterile, experiments have

been made on the breeding powers of hybrids to determine the nature of doubtful species. Thus Hunter believed that he had obtained absolute proof of the jackal being a dog, and to have equally made out the wolf to be of the same species, and then proceeds to speculate, whether the wolf is from the jackal, or the jackal from the wolf; for he had obtained pups from the connection of a female hybrid jackal dog and a male terrier, and between a female hybrid dog wolf and a male gray-hound; and he adds in respect of the latter fact, that it would have equally proved the same fact if she had been lined either by a wolf, a dog, or one of the males of her own litters.* But this assertion that the fertility of a hybrid with an individual of a pure breed proves the fact of the identity of two supposed species, equally with the production of offspring from the connection of hybrid with hybrid, cannot be admitted. To know the identity of two supposed distinct species on the assumption that the fertility of the hybrids from the two gives the proof required, it should be shown that such hybrids are fertile among themselves and capable of propagating indefinitely an intermediate variety. Hunter's celebrated experiments, however, only proved that two nearly-allied species will produce a hybrid offspring, and that such hybrid may be impregnated by an individual of the pure breed; but this fact illustrates the general law by which the reversion of the hybrid to the pure breed is provided for, while on the other hand, the intermixture of distinct species is guarded against by the aversion of two specifically distinct species to sexual union."†

In regard to the Indian dogs of America the same difficulty exists that is presented on the Eastern continent. Dr.

* Hunter's Anml. Econo., by Owen, p. 323.

† Brande's Dictionary, Art. Hybrid.

Morton states that the "prairie wolf produces a hybrid that is prolific without end." We are aware that some of these hybrids have been known to produce, but we doubt whether any experiments have been instituted to render it perfectly certain that they had not access to the common dog—all the half-breeds we have seen or heard of, were left unrestrained to mix with the common dog, and we have heard from a responsible source of a female hybrid, six years old, that had never produced. Whilst admitting the resemblance of the Indian dogs to some of the varieties of the wolf, we are far from agreeing with Dr. Morton, that "the pure Indian dogs of N. America are all of one variety." If we only examine the descriptions and plates given by Richardson,* as also those of Col. Hamilton Smith,† said to be of pure breeds of the several varieties, we cannot fail to remark the very striking differences which these, now permanent varieties, present, one of which, the Newfoundland dog, is semi-palmated, takes to the water as to a natural element, and swims like an otter. From what admixture of wild species have these races of Indian dogs derived their origin in a country where there are no native wild dogs? Leaving the bear, the cougar, and the wild cats out of the question, we have then only the two wolves, the large and prairie wolf. We presume, Col. Smith himself would not resort to our foxes. It may be inquired, do these wolves produce a mixed breed on the prairies or in their native forests, where they are known to live in the vicinity of each other? Who has ever heard of an intermediate breed produced between them? What hunter has ever obtained a solitary trophy of this description? These separate races of Indian dogs in America existed at the time of its first discovery, and we have never had any satisfactory evidence

*Fauna Bor. Amc. †Nat. Lib'y., vol. 5, pl. 2, 3, 4, 8.

that the Indians domesticated any of the wolves or foxes to improve their breeds of dogs. Whether, then, they have been derived from the common wolf, or the prairie wolf, they have undergone most striking variations; hence it would be just as easy to suppose that they have sprung from one species of wolf as from a mixture of the hybrids of the two species, as the dogs differ from both: or might we not be permitted to make a still more reasonable conjecture that the dog having ever been the companion of man in all countries, followed him in his migrations to our continent; that the Esquimaux received him from their Greenland neighbours, and introduced him in the North; and the Asiatic brought him from the West—that in neither case could the horse be transported—hence he was not introduced by the aborigines.

SURINE HYBRIDS.—Under this head Dr. Morton informs us of a comparison made by Mr. Eyton of the Chinese, the African, and the English pig, who found that whilst they agreed in the number of cervical vertebræ, they varied in the dorsal vertebræ from 13 to 15—the lumber from 4 to 6, and the caudal from 13 to 20. He further remarks, “as far as time and circumstances had allowed the experiment to proceed these several animals breed freely with each other, and in the instance of the Chinese pig the offspring is unquestionably fruitful.” He adds in a note that the African hog (*Sus. Æthiopicus*) had been removed to a separate genus by Cuvier (*Phacochærus*) and finally says, “Hamilton Smith has arrived at the conclusion that there were three, if not four, original species endued with powers of unlimited reproduction.”

We recollect having read the paper of Mr. Eyton eleven years ago, but have mislaid the volume, and cannot now refer to the article. We think, however, we will be able

to give a reasonable explanation without the necessity of referring to it. We are inclined to believe, from the habit of Mr. Eyton, that he did not use the classical names in preparing his paper, and hence his reference may have been to one of the varieties of the common hog, which is frequently called the Guinea hog, or African pig. The wild boar, the origin of all our varieties of swine, exists in a wild state in Europe, Asia, and Africa. It is every where domesticated with great ease, and varieties differing widely from each other, have been produced from it in the several countries; but these varieties have no kind of relationship with any species of Ethiopian hog (*Phacochærus*), which as Dr. M. justly observes "belongs to a different genus." Mr. Eyton published his paper in the proceedings of the Zool. Society, in 1837. On the following year we were shown a stuffed specimen of the African—or as it is usually called Ethiopian—hog, (*Phacochærus*) sent to the Society from South Africa by Mr. Du Cane, and were then informed that there was not a living specimen in Europe. A skin of the other species (*P. æliani*) sent by Ruppel, was also deposited there. The African or wart hog, which is another of its names, is a disgusting savage animal—its flesh is not eaten by the natives, and no attempts at domestication have been made. Col. Smith himself gave a figure of this animal* drawn by Howit from an old stuffed specimen in the Leverian Museum, with a remark, "there is a fragment only of this species in Paris." In turning to Smith's own statement of this comparison by Eyton,† he says that the examinations were made between the wild boar, the English and Chinese pigs. "It will not then be surprising if these breed freely with each other," inasmuch as they are mere varieties of the same species, as admitted by Smith

*Griff. Cuv. 3d vol., p. 410.

†Nat. Lib., vol. 4, p. 94.

himself and all other naturalists, as we shall presently show. Further on in this new work he says, "we may justly suspect that there are three if not four original species (including the African) with powers to commix." Here then was the first suspicion that ever found its way into print from any naturalist, that all our varieties of the hog had not descended from the common wild boar of Europe. And now let us see the evidences. Mr. Eyton, of whose knowledge in comparative anatomy we are not acquainted, but who, no doubt, made a fair report of a single specimen of each variety examined, had found a difference in the vertebræ of several parts of these animals. Immediately on this discovery Col. Smith, who had previously included all the wild boars in the Eastern continent under one species, and it is evident there are no distinctive marks by which they can be separated, proceeds without any further comparison to conjecture that they might be composed of three or four different species. In referring to the proceedings of the Zoological Society,* we will find some observations on the distinction between the cervical and dorsal vertebræ in the class mammalia by Mr. Turney. It will be seen, there are found to exist in two different specimens of the same species, even in wild animals, very striking differences in the rudimental ribs; there were two less in some specimens than in others. If such differences exist even among wild animals of the same species, are we not likely to find still greater in the varieties that have for ages been domesticated.

The differences in the vertebræ of the specimens examined may not have been constant, nor were these differences great. They did not in three of the varieties examined in England, and two in France, differ more than two in the dorsal, two in the lumber, and one in the sacral

* July, 1847, p. 110.

vertebræ. We have seen that in wild animals there is an occasional difference found in some of the vertebræ. This we have reason to believe is more frequently the case in those that have been long subjected to the modifying influences of domestication, and have branched out into decided external characteristics. In a dissection of a negro by an anatomist it was discovered that in the specimen examined there was one lumber vertebra more than was contained in the skeleton of the white man. The parties, who had been laboring to prove that the negro was of a different species, now triumphantly proclaimed this fact to the world as an evidence of the truth of their theory. For a time the believers in the unity were placed under the harrow. Presently, another negro was dissected, and it was ascertained, that he had no more vertebræ than those found in the white race, and finally the skeleton of a white man was found that had an additional lumber vertebra, such as had been previously detected in the negro. After this discovery they prudently said no more about it.* Nature is after all a truth teller. The differences in the vertebræ of the varieties of men may now be placed in the category of exploded errors by the side of another discovery in the different convolutions of the brain between the white man and the negro.

Eyton had stated, and this has been repeated by Col. Smith and Dr. Morton, that the caudal vertebræ differed in these several species or varieties from 13 to 20. Here their calculations were not only very moderate but far below the mark: a pig with a short tail has but few vertebræ, whilst another with a long tail has many. They might have said from 3 or 4 to 20. But it is not necessary to look among the various breeds for this difference: they need only

*Nat. Libry.

examine the pigs in the same litter, and they will discover striking differences in the length of the tail, and hence in the number of vertebræ. We long since satisfied ourselves on this head, and are somewhat surprised that it should now be produced as even one of the evidences of specific differences. Whilst on this subject we will mention another fact that may be easily verified. The wild boar has six incisors in each jaw. In examining the mouths and skulls of some whose predecessors were taken when young from the King's forest, near Dresden, we found in a full grown animal of this species that had been domesticated and was of the 3rd generation from the wild stock, that the incisors were only three in each jaw : the same deficiency exists in some specimens of the domesticated hog.

In truth, however, it appears to us that naturalists who would venture to throw out even a suspicion that our domesticated hogs were not descended from the wild boar must have some favourite theory to support and be hard pressed either for arguments or facts. Smith himself* gives as varieties, the Chinese pig, as well as the race with a single hoof; and in his very last work in which these doubts are expressed† he speaks of the facility with which the wild hog becomes domesticated; how the tame breeds often stray into the woods, and breed with the wild boar; and how in South America and Jamaica he had seen the domestic breed becoming wild, and resuming the character of the wild boar of Europe;—even the young becoming striped like those of France. Whilst we agree with him in the fact of their easily returning to their wild state when suffered to roam unmolested in the forest, our experience does not warrant us in believing that they ever again re-

* Synopsis Griff. Cuv. p. 287, and in vol 3d, p. 405.

† Nat. libry. vol. 4th, p. 93.

turn to the original colours of the wild species. We have frequently seen several young pigs in a litter of the domesticated hog exhibiting the longitudinal stripes on the back, which exist in the young pig of the wild hog, but we have moreover seen many feral hogs in Carolina that in the fourth generation after having become wild still remained black or spotted.

Several years after Eyton's examinations and Col. Smith's work were published, the eminent Owen,* referred all our domestic breeds to the wild hog, and Sir. Wm. Jardine, the associate of Col. Smith in the publication of the Naturalist's library† says, "It is now admitted by all writers that this animal is the stock whence our domestic races have arisen and spread themselves nearly over the world, with the exception of the Islands of the South Sea." And even in regard to this variety Col. H. Smith says,‡ "It is to the species in question (the wild boar) to which the black variety in the South Sea Islands owes its origin, as well as all the rest."

Regarding this matter as set at rest, beyond the possibility of a quibble or a doubt, we deem it unnecessary to record our personal and frequent self-satisfactory examinations on this subject.§

FELINE HYBRIDS.—Dr. Morton says, "these animals, at least the domestic varieties, had long been regarded as one species, but modern researches have established that the

* Art Hybrid, Brande's Dict. † vol. 9, p. 209. ‡ Griffl. Cuv. vol. 3d, p. 404.

§ Note. After this article had been prepared for the press, we found the experiments of Eyton quoted in the Farmer's Library, (vol. 2nd, p. 432.) This whole subject has been thoroughly investigated by Martin, one of the scientific officers of the Zoological Society. We find that we were correct in supposing that Eyton had not used the classical names, and that by his examination of "female pig from Africa" he had no reference to *Phacochærus* (Ethiopian hog.) The mistake of Dr. Morton originated from a want of scientific accuracy in Eyton. We have only space to remark that the whole article as prepared by a very experienced anatomist and physiologist is worthy of perusal; it is also in coincidence with the views we have expressed.

blue or Chartreuse cat, originally belonged to a distinct feline group; the Bengal cat of Pennant, pertains to a second; while the tortoise-shell cat is believed to have sprung from a third group originally indigenous to South America. As authority for this statement, we are referred to Col. Smith. We turn to the author for evidence, and we find that instead of affording any reasons for so suddenly opposing the views of all naturalists, as well as his previously published declarations, he settles the whole matter in the identical words quoted above without a shadow of evidence. We turn to the 3d. vol. of the Naturalist's Library,* on the Feline tribe, written by his coadjutor and friend, Sir Wm. Jardine, Bart., and the latest publication on the subject. He sets down the Chartreuse, Persian, pendant-eared cat of China, the Angora cat, tortoise-shell cat, and a breed in the Isle of Man, without a tail, as all varieties of the domesticated cat, of which the Egyptian cat (*F. maculata*) is the original parent. In this he is unquestionably right. We now turn to Griffith's Cuvier prepared from the text of Col. Smith, and finally, to the synopsis written by the latter,† and here he gives every one of the above species as mere varieties of the domesticated cat, assigning as its parent the common wild cat of Europe, (*F. catus*). We respectfully submit whether an author so vacillating in his opinions, so unscientific in his investigations, and so heedless in his writings deserves to be quoted as having established any fact, on so frail a foundation.

The fact that the wild cat of Europe, so nearly resembling the common cat, had always resisted every attempt at domestication, presented a difficulty to all our early naturalists in tracing the origin of the domesticated species.

* p. 239. † Griff. Cuv. Synop. vol. 5th, p. 172.

At length however by the adventurous labours and scientific researches of Ruppel it was discovered during his first travels in Nubia, existing in a wild state, in rocky and bushy regions west of the Nile. He also procured specimens of it preserved as mummies, and representations of it are found on the monuments of Thebes.

We have then at last detected the origin of our common cat, not under three distinct feline groups, or that "the domestic cat was once of at least two species,"* but under one well described species. Among the naturalists in Europe, we heard not a dissenting voice on this subject, and we claim the right of insisting that those who now conceive that they have established a different theory, should, at least offer a reason for their dissent.

Dr. Morton next quotes D'Azara as stating, "that in the forests of Paraguay, the F. Yagouroundi, and F. Eyra, both unite with the domestic cat, and he adds, that should these wild species become in time extirpated, and the mixed breed alone remain, the latter would be very naturally referred, with all its varieties, to a single original species."†

Although D'Azara was no scientific naturalist, and designated his species only by the Indian and Spanish names by which these animals were known in Paraguay, and has from this cause given much trouble to naturalists, in guessing at the species to which he had reference; although Temminck and Cuvier in many places give evidence of the perplexity into which they were thrown by his strange names of species; although Lichtenstein wrote a small volume in the German language in explanation of what he conceived to be the views of D'Azara, and we confess we are still left in doubt in regard to many of

* Morton. †Quadr. Paraguay, vol. 1, p. 174.

them, we must nevertheless admit that he was a close observer of nature, and a good describer of habits; we were therefore very much surprised to hear that D'Azara had made such a strange assertion. We accordingly turned to the vol. and page quoted by Dr. Morton,* here we find a history of the two species *F. Yagouroundi*, and *F. Eyra*. He controverts some of the notions of Buffon who had supposed that the European cat originally existed in America, and endeavoured to prove that the species he had mistaken for it was the wild cat of Paraguay, *F. Yagouroundi*. We will not fatigue the patience of our reader by quoting the 8 pages in the French language, which are occupied with descriptions of these animals farther than to state that in our edition which we perceive is the one contained in the academy of Nat. sciences in Philadelphia, there is no statement like that ascribed to D'Azara. All that we can find that has any reference to this subject is in the 75th page, where, after combating the assertions of Columbus, Buffon and Charlevoix, who supposed the European cat was found in America at the first discovery of the country, he says, "Mais comme personne ne les caracterise, il me semble plus prudent de croire qu'ils parlent des chats Americains qui sont *L'Yagouroundi* et les animaux qui vont suivre, plutot que du chat d'Europe qui, a mon sentiment, n'existe ici que depuis la conquete." Which we would literally translate thus, "But as no person describes them, it appears to me more prudent to believe that they speak of the American cats which are *F. Yagouroundi*, and the animals which follow," (meaning the *Eyra* and *Chat Pampa* on the next page) "rather than the cat of Europe which in my belief did not exist here before the conquest." There

* D'Azara *Quad. de Paraguay*, vol. 1, p. 174.

exists therefore a misunderstanding certainly not intentional on either side. We have consulted the work, which is the only one usually referred to, "Essais sur L'histoire naturelle des Quadrupedes de la province du Paraguay, par Don Felix D'Azara—traduit par Moreau-Saint-Mery." The Spanish work we could not find in Europe; and we think it has never reached America. We have very recently heard that an English translation had been commenced by Hunter, but are not aware that it has been published. Under these circumstances however we do not consider it requisite to enter farther into an examination of this strange phenomenon given on the authority of D'Azara.

FELINE AND MUSTELINE HYBRID.—Under this head we have an account from Loudon's Magazine of Nat. History* of a domestic cat that had escaped from a house in Penza, on her return she produced young, two of which strongly resembled the martin—the proprietor multiplied the race, and in the course of a few years raised more than a hundred of these animals. Griffith, however, who prepared his work from the text, and under the inspection of Col. Smith, very judiciously remarks—"The account, however, must be taken with caution, the original intercourse which produced them is merely suppositious." That the house-cat should stray into the woods, and look out a male martin for its mate, is certainly most inexplicable. We possess the same species of pine martin (*M. Martes*) in all our northern countries, but have never yet heard of so strange an alliance as that of which so unsatisfactory an account is given as having occurred in Russia. A considerable number of living animals of this species have from time to time for many years past been kept in the menagerie of the Zoological Garden of London, but they

* vol. 9, p. 616.

have not yet succeeded in producing this feline and musteline hybrid. In making inquiries of a Swedish naturalist (whom we met at one of the annual meetings of the naturalists of Germany held at Freyburg in Baden) in regard to the authority of this strange account: he with a smile related an experiment that a friend of his had made to produce this rare breed of martin cats. He accordingly obtained and succeeded in rearing a young male pine martin. He kept it for a year in a cage with two copartments separated by wires; in one of which he occasionally admitted a female cat of about the same age. When the period arrived in which indications were given that the cat would receive a male, they were one evening placed together. On the following morning however he found that all his plans had been frustrated, there had been a mortal combat during the night, and the cat had succeeded in killing the martin.

We should receive all these accounts of the domestic animals straying into the woods to seek for wild mates of another species with great caution. We have always observed when a singular or deformed animal is produced attempts have been made to trace the origin of it to some intercourse with a wild species. Two cases of a similar character have been brought to our immediate notice within the present year. An animal appeared in Beaufort, and two others at Columbia, S. C., which were asserted by whole neighbourhoods to be hybrids between the common cat and gray rabbit, (*Lepus Sylvaticus*.) Some of these accounts found their way into the public prints of America, and we perceive were republished in London. The hybrids were represented as having the fur of the rabbit with its short tail, and long hindlegs, sitting on its tarsus, and leaping in the manner of the hare. They were moreover said to be so

wild that they seldom came to the house ; after some correspondence and frequent disappointments, one of the animals was sent to us from Beaufort. The teeth soon told the story : It was a true cat, born, however, with a short tail, with long hind legs, and claws that could scarcely be called retractile. It may prove a second edition of the Isle of Man cat. If, however, these strange animals should be excluded from an intercourse with other cats we are inclined to believe that the variety might be perpetuated, and it would be regarded, as it is now considered by many, a feline lepine hybrid. We have, however, learned from experience to be very cautious in receiving all the statements of strange productions of hybrids. We have been assured of mongrels between the deer and goat, between the drake and the common hen, and very recently, between the fox-squirrel and the rat. We have in all these cases found them to be accidental deformities, diseased or maimed animals, yet they have in many instances found their way into public prints—next they are quoted in books, and then they are cited as authorities. This is at least a credulous world, and the student of nature should be on his guard not to admit them into a scientific paper.

We ought scarcely to notice the remark of Col. Smith, as quoted by Dr. Morton, that the tortoise shell cat is believed to have sprung from a third group originally indigenous to South America." How is this proved ? Griffith* gave the figure of a stuffed specimen deposited in the Museum at Erlangen, said to have come from South America, and remarks, "This seems to be the Spanish or tortoise shell cat in a wild state, or it may be the Paderos of D'Azara." When Col. Smith prepared the synopsis for this work he arranged the tortoise shell cat as a variety of the common cat

* Vol. 2nd, p. 487.

with the closing remark,* "The New Spain cat is probably a variety of the common species." We are not aware that he subsequently instituted any further investigations. Finally the Editor of the 3d vol. of the Naturalist's Library† remarks in reference to this specimen, "May the tortoise shell variety not have been introduced into America by the Spaniards and become wild?" This indeed ought to have occurred to naturalists before, as our cats especially in warm climates are constantly becoming wild; or they might have further inquired whether the specimen in Germany was not in reality that of a tame cat brought from South America, or some other place.

We will not stop to inquire after the history of the Pensa cat, alluded to by Dr. Morton as a hybrid, since all European naturalists, including Col. Smith himself, have rejected it from their lists, and make no allusion to it either as a species or variety.

The hybrid between *Lepus cuniculus* and *L. timidus* we conclude, was sterile, and therefore requires no further notice. The same may be said in reference to the hybrid between *Phoca jubata* and *P. ursina*, with the exception that no recent naturalist has been able to confirm the observations of Steller, who died more than a century ago.

We have now endeavoured to review the cases of hybridity that have been brought to our notice to prove to the world, that "since various different species of animals are capable of producing together a prolific hybrid offspring, hybridity ceases to be a test of specific affiliation."

The onus of proof rests with our opponents. Have they afforded it? Have they been able to trace a single race of any of our species, either wild or domesticated, to an admixture of any two or more species? Have they gone fur-

*Griff. Cuv., vol. 5th, p. 173. †P. 247.

ther than merely to indulge in speculations and conjectures, and in endeavouring to throw the shadows of doubt on opinions long entertained by the world of naturalists? Have they produced such facts as should induce us now to adopt their speculative notions?

CHAPTER II.

HYBRIDITY IN BIRDS, REPTILES AND PLANTS.

We will now proceed to an examination of the cases of hybridity in birds collected by Dr. Morton and which are contained in his second article.* He commences with the GALLINACEOUS HYBRIDS.

He informs us that the best ornithologists have succeeded in tracing this family of birds, the cocks, (*Gallus*) to at least ten different species." He conceives that these birds possess a power of mingling with each other and producing a fertile hybrid progeny. In a note he enumerates the 10 species of such as are already known: *Gallus bankivi*, *G. æneus*, *G. anstrutheri*, *G. furcatus*, *G. Soneratti*, *G. Lafayettii*, *G. giganteus*, *G. lanatus*, *G. ccaudatus*, and *G. crispus*; and says that he has omitted several supposed species. He adds that he has examined five of these original species in Dr. Wilson's collection of birds, deposited in the Academy of Natural Sciences in Philadelphia.

If these specimens were contained in the Museum of the Prince of Messina, in Paris, (the best private collection we saw in Europe) we recollect having examined them very carefully, and had besides opportunities of seeing all the species, both in a prepared state and alive in aviaries, that had reached Europe eleven years ago; we may then be allowed to venture an opinion, the result of personal observation.

Temminck had with some hesitation and doubt imbibed the notion that the varieties in our domesticated fowls might

*Silliman's Journal, 2nd Series, vol. 3d, p. 203.

be traced to some wild species that bore the nearest resemblance to them, and when these could not be found in a wild state, he deliberately named and figured the domesticated birds, with the remark that they might yet be discovered in some unknown forest. Although we entertain a favourable opinion in regard to Temminck as an ornithologist, still we confess this appears to us as a most extraordinary mode of establishing a species. The negro cock, (*Gallus morio*) the silk cock, (*G. lanatus*) and the crisped or frizzled cock, (*G. crispus*) he regards as having possibly arisen from a distinct species, as yet undiscovered in their wild state;* to this he might also have added *Gallus ecaudatus*, the rumpless fowl as well as the five-toed fowl (*G. pendactylus*) and twenty other varieties that are constantly springing up among our poultry.

Suppose now that we were to proceed in this manner in elevating mere varieties of any of our domesticated birds—the tame pigeons, for instance, which are admitted by all our recent and best naturalists to have all been derived from the wild biset or rock dove, (*Columba livia*)—and describe the several varieties such as the powder, tumbler, carrier, runt, and fan-tail, as species, with good figures, and offer as a reason that these powders and all the other species might yet be found in some quarter of the world, would not the world of naturalists refuse their assent to so gross an absurdity? And how can we regard in a more favourable light this attempt at establishing the origin of our poultry by describing varieties that exist in a domesticated state? After many misgivings, however, Temminck seems to consider nearly all our domestic fowls to have originated from two wild species, the Jajo cock of Sumatra, (*G. giganteus*) and †

*Griffith's Animal Kingdom, p. 22 and 29.

†Cuv. Anim. Kingdom, pt. 20th, p. 174.

the Java cock, (*G. Bankivi*) found in the forests of Java. Let us now investigate the claims of the Java cock of Sumatra (*G. giganteus*) to the parentage of our common species. Dampier and Marsden had mentioned the existence of a large wild cock in Sumatra; at length Temminck obtained a leg and foot of the bird, of which he gave a figure in his Natural History of Gallinaceous Birds. From this leg containing a spur, he began to speculate. We may be allowed here to inquire whether this leg is not too slender a prop to support so large a superstructure as the numerous races of fowls, of which he would make this species the origin? We do not doubt, however, that such a bird exists, as we saw a specimen in the Edinburgh Museum that might be referred to it, which was said to have come from Sumatra, and which we did not regard as a specimen of a tamed variety. The fowls, however, of this variety that were carried to Europe were all domesticated birds, and were what are called in America, East India or Malay fowls. We have yet to learn that this wild bird, if it does exist, is positively domesticated in Java or Sumatra where our common poultry also are found, and whether the origin of any of our fowls can in reality be traced to it. The Phillippine Islands, Malacca, Borneo, and all the numerous islands situated south of the tropic of Cancer, are constantly sending us varieties of large fowls differing widely from each other, which bear no resemblance to any wild species; we need only refer to the Malay, Kulm, the Chit-tagong, the Cochinchina fowl, etc. Nearly every island has its distinct breeds of poultry, and we are therefore led to the conclusion that varieties are springing up in the East in the same manner as they are known to do in the West.

The frizzled fowl (*G. crispus*) is evidently a poor variety of our common fowl. No specimen from a wild state has

ever been procured or described, and the notion that "it is now believed to be a distinct species and a native of Guiana" is derived from the following remark of Capt. Stedman: "A small species of the dunghill kind with rumpless, reverted feathers seems natural to Guiana, being reared in the inland parts of the country by the Indians or natives." No specimens were carried to Europe. We do not even possess any evidence that a single true species of *Gallus* inhabits any portion of North or South America. Besides the frizzled fowl was described from a domesticated European specimen.

Dr. Morton says, "The *Gallus ecaudatus* (tailless fowl) has been triumphantly quoted as an evidence of the power of climate and locality to produce changes not only of plumage but of anatomical conformation. This bird is deficient in the last dorsal vertebra and consequently has no tail." After referring to the common belief that it had originated in Virginia, he adds that "this is a wild native species of Ceylon."

What naturalists will yet make of Temminck's supposed wild species of rumpless cock (*G. ecaudatus*) time only can determine. We do not believe that any species of the *Gallus* family will ever be detected in a wild state, without the important natural appendage of a rump. It is true we have breeds of dogs and cats without tails, but their predecessors had tails; accidental defects have become perpetuated. The few specimens we saw in the collections of stuffed birds in Europe, labelled *Gallus ecaudatus*, were of different colours, and gave other evidences of their barn-yard origin. That our American rumpless fowls, however, have had no wild origin, we can assert with perfect confidence, as we have seen this variety, more especially among the hens springing up among our

poultry, of at least four varieties, the domestic, crested, the bantam, and the silk fowls. The only difference existing between the rumpless and common fowls, is in the absence of one or more joints of the terminal extremity of the spinal column called os-coccyx. In the common fowl there are seven vertebræ that may be considered as caudal. We have examined many specimens of rumpless fowls, and find them differing widely in the number of joints that are absent. In some the penultimate joint is only wanting, whilst in others we have found a deficiency of two or four, and even six vertebræ. This affords an additional evidence, that this peculiarity is an organic deficiency transmitted by generation, and that the bird is a mere variety, and not a true species.

The old account published in the Philosophical Transactions of 1693, of the rumpless fowls originating in Virginia, which has for so many years been the subject of suspicion, can be verified by many examples of a similar character.

We would yet observe in conclusion, under this head, that whilst Temminck claims two species as the origin of nearly all our domestic fowls, and we have seen on what a slender foundation one of them rests, we regard the Javan cock (*G. Bankivi*) as the origin of all our species. We have seen these birds that had been brought from their original wilds breeding readily at the Zoological gardens in London, and also on the continent; we have heard them crow, and witnessed their actions, and so nearly did they resemble the domesticated fowl in every particular, that we could scarcely distinguish them from some varieties among our poultry. We also examined at the gardens of the Zoological Society the only other species from which any of our poultry are supposed to have been derived—the

jungle cock of English sportsmen in India (*G. Sonneratti*.) The brilliant metallic reflections on the back, with a tail of bright blue colour—a flat horny plate in each of the long feathers resembling this peculiarity in our wax bird (*Ampelis Carolinensis*), and the fact that the hen has neither comb or wattles, but having the throat covered with feathers like our partridge, instead of being naked and wattled, led us to the conclusion that it could not be regarded as the origin of any of our varieties of poultry.

Dr. Morton next congratulates us that we have on the continent of America a family of Gallinaceous birds, the Hoccos or Curassos (*Crax*) which readily unite with each other, and give rise to a progeny that is reproductive without end. He adds, “here we have a family of wild birds in which there is no possible question of their origin and specific diversity, in which we have passing under our eyes, as it were, the identical series of phenomena, those very changes which are so remarkable and so familiar in the common fowl.”

We can only say in reference to this, that if our friend had met with all the perplexity and mortification in endeavouring to trace out the characteristics of these closely allied species or varieties, that it has fallen to our lot to experience, he would not regard the subject as so easy of investigation. Guiana and its neighbouring coasts, the native regions of these birds, is almost as much of a terra incognita to us, as the opposite continent of Africa. Having no more confidence in Temminck’s various species of *Crax* than we entertained for his newly-invented species of fowls taken from the barn-yard,—knowing also that the same difficulties presented themselves to all European Ornithologists—unable as we were to decide on the species from any specimens we could procure, we sought for twenty

years to obtain possession of the living birds. Through the kindness of our friend Edward Harris of New Jersey and others, we, after long intervals, were able to procure several specimens. The birds had been domesticated in their native country, had changed their forms and colours, and we could not find any two precisely alike. We were equally unsuccessful in attempting to multiply the species. If left at liberty they would fly off and stray about the neighbourhood; when we clipped their wings, the male was, nevertheless, able to make his way up a tree, where he constructed a nest of paper-mulberry leaves, (*Brusonetia papyrifera*) by breaking the twigs. The female, unable to ascend, dropped her eggs about the yard, and we finally came to the conclusion that they could not be advantageously propagated, even in our Southern States. We presented a pair of them to a friend in a neighbouring parish, who, we hoped, would be more successful, by giving them the freedom of his plantation. They, however, escaped into the woods, where they either became food for the wild cat, or, for aught we know, have associated themselves with the wild turkeys. We are not aware that a single young one has been produced in the United States. We cannot admit, therefore, that "the phenomena are passing under our eyes." From Temminck's account the Hollanders were more successful in rearing these birds. In a visit to Holland, however, a few years ago, we could not find a single individual of any kind in any of their aviaries. In England, where medals were offered to the most successful propagators, and where no claimant could be found to make good his title to the prize,* we perceived that their efforts at rearing the Curassoos, although more successful, were attended with great difficulty,

* Farmer's Lib. vol. 2, p. 566.

and their examination of the species most unsatisfactory. At the aviary of the Earl of Derby, where several of these birds were kept in confinement, we found all the naturalists equally perplexed with ourselves in deciding on the species ; the birds were of nearly the same size and form, but varying infinitely in colour. We need specimens from their native forests, and even there we are informed that they vary greatly in colour. As yet we know not the true species from the varieties. Cuvier says,* “Individuals are sometimes sent to Europe so variously coloured, that we are at a loss to characterize their species.” Temminck† speaks of his difficulties in deciding on the species, and says he has “been frequently deceived:” we do not question the truth of this remark, and we have little doubt that it will yet be discovered that he was deceived in the conclusions at which he finally arrived, and that *Crax elector* and *Crax rubra*, at least, will be found to be only one species, varying in color, the result of domestication.

Since writing the above, we have accidentally met with the following notice of the farther examination of the Curassos, by our friend and correspondent, the Earl of Derby, President of the Zoological Society, which strengthen the views we have already expressed. His letter was read to the Society July 11th, 1846.‡ in which he stated:

“It appears to me that the different species of the *Crax* are not well defined. I had a male black and female brown, which bred for 3 years, always producing two, which were always a black male and brown female. I have now a pair black with yellow bills, and from their eggs, I have a brown young one. There can be no doubt of the pa-

* Anm. King'd. vol. 1, p. 345.

† Griff. Ann. Kingd. pt. 2. p. 107.

‡ Trans. Zool. Soc., 1846.

rentage, as I have only one other Crax, which is also black, with a black bill." The black is Crax elector of authors, and the red is Crax rubra, and we will ere long have the decision in regard to the other species or variety, (*C. globicera*.) The attempt at producing a fertile progeny between the Hocoes and the Pauxi, (*Ourax*) closely allied species, have utterly failed, as we are informed by Griffith, who is so often quoted by Dr. M. The author says* of "the individuals which sprung from these illegitimate alliances, a considerable number proved unfruitful, others have been fecundated but once and never produced afterwards."

The common Ring Pheasant, referred to by Dr. M., as producing a fertile progeny with the common pheasant, was regarded by most naturalists before the days of Temminck, as a mere variety of the common pheasant. They differ only in the former having a white spot on each side of the neck. The ring pheasant certainly bears so close a resemblance to the common species, that were the ring absent, they could not be distinguished from each other.† Because it was found wild in the woods of China as in England, Temminck considered it a distinct species.

Dr. Morton says, "It is now ascertained to be a hybrid between the Phasianus Colchicus and P. torquatus of China;" the P. Colchicus is the common pheasant, and the latter the ring-necked pheasant. The following statement, we think, will give the true elucidation of this matter. In China, the ring-necked pheasant is found among the common pheasants. A variety very similar in marking has since every where originated among the breeds of common pheasants in England, and has been called the ringed pheasant; and as the ring-necked pheasant had been

* Griff. Cuv., part 2d, p. 107.

† Griff. Cuv., part 21st, p. 232.

brought to England, it was supposed that those of this variety were the hybrids between the two. We have preserved the ringed pheasant in an aviary: its size, color, (with the trifling exception of the spots on the neck) its eggs, and its habits, were similar to those of the common species. The gentlemen in Europe in whose preserves these birds originated, regarded them as mere varieties of the common pheasant, and the last, and one among the best writers on this subject, W. C. L. Martin, has expressed a similar opinion.* We are strongly inclined to believe that the ring-necked bird of China will prove to be no other than this variety, and will be put in the same category with the Japan Peacock.

If these two varieties of pheasants then produce a prolific offspring, the latter would not be hybrid any more than would be the offspring resulting from the mixture of the tame and wild turkey. A new and more beautiful variety of the common pheasant, called the Bohemian pheasant, originated but recently in Scotland.

HYBRIDS OF THE FRINGILLIDÆ.—Dr. Morton quotes Bechstein to prove that the red pole will breed with the goldfinch, linnet, and canary, while the cross between the latter and goldfinch is capable of re-production, and the citrel finch readily pairs with the canary, and gives rise to a fertile offspring. In this connection we will quote what is said in the same page.† “The female mules of the first alliance refused pairing, either with the male mules of the citrel or the canary. The fecundity of the males from the alliance of the canaries with goldfinches, does not appear to be proved by a single fact.”

There is considerable confusion in the article, as the writer states that the female citrel will reject in captivity,

* Farmer's Library, vol. 2d, p. 503. † Griff. Cuv., vol, 7th, p. 271.

not only the advances of the male canary, but those of her own species; and adds that in order to produce a fertile progeny, the male citrel must be paired with the female canary.

We can only add to this, that we had hybrids of all these species in confinement, at intervals during many years; these laid eggs and sat upon them, but in no case were any of their eggs impregnated; others, however, may have been more fortunate.

Dr. Morton states, "A yet more remote alliance, that between a canary and a nightingale, produced an egg that could not be hatched."

We have seen the remote alliance to which he probably alludes, between the English drake and common hen of our barn yard, but we have also seen two female canaries laying eggs without a mate, nay, a dozen hens daily depositing eggs, whilst there was no male in the neighborhood. It is scarcely necessary to add that no male is necessary to induce a bird to lay an egg that cannot be hatched.

HYBRIDS OF THE ANATIDÆ.—Dr. M. states that the "cross between the China goose (*Anser cygnoides*), and the tame goose of Europe is proverbial," and quotes Eyton, Blythe, and Cheveril. To a certain extent these gentlemen are correct, as we have learnt by experience. We obtained hybrids between these two species, which we supposed to be prolific, although we could not positively decide this point, the original species being in the same flock, and geese as well as tame pigeons are to a certain extent polygamous. We now recommended this improved breed of geese to our friends the planters, as they were fine birds and produced eggs several weeks earlier than the common goose. We however after five years' trial, ascertained that

many of our hybrids laid eggs that were not impregnated. The true hybrids, in many instances, were only prolific with the pure breeds, and many were absolutely sterile. Those planters who had not a considerable number of the originals of either species in their flocks, complained that these geese ceased to be prolific, and, to use a common term, laid clear eggs. At present the hybrid productions are regarded as ruinous to the flock, the different species are beginning to be kept separate, and the common goose is every where in Carolina rooting out the China goose; the former being more prolific than the hybrids of the latter. Indeed no new race has been or can be produced, as there is a constant tendency in the hybrids to return to one or the other of the original species; and it is to be particularly remarked, that among these hybrids, there has never been the slightest appearance of any new variety—the birds are merely intermediate in form and color between the two species.

Ducks.—Dr. M. mentions the following circumstance, related to him by a gentleman of New York, who “saw at Rye-pond a female wild duck, that had been taken when young and placed in company with the common tame species, and that a fertile hybrid progeny was obtained from them. From the description of this wild bird,” he remarks, “I suppose it to be the *Anas rufitorques*.”

It must be observed in reference to this statement, that no examination was made either of the original young wild duck, or the hybrid progeny. It could however scarcely have been the ring-necked duck. (*F. rufitorques*.) We doubt whether in domestication it would associate with the English duck. The *rufitorques* has been arranged by Bonaparte, Audubon, and all our correct ornithologists, under a separate genus, (*Fuligula*), to which it truly be-

longs. We would add that a communication was made by A. D. Bartlett, Esq., to the Zoological Society of London,* in which he enumerates all the cases of hybridity that had occurred among water fowls. He mentions that 19 kinds were on record belonging to the goose, and 5 to the duck; and he then adds, "I am unable to find one instance of any species of the genus *Fuligula*, which includes no less than 15 species, which under any circumstances crossed." Besides, it never breeds in New York, and indeed migrates so far towards the polar regions during the breeding season, that even Richardson, who often observed it in the far north, did not see its nest. The only species of ducks we could find breeding in any part of the State of New York, are the summer duck, (*A. sponsa*,) the dusky duck, (*A. obscura*,) and the Mallard, (*A. boschas*.) The former is too common to be easily mistaken, and moreover will not produce a fertile progeny with the common duck. Dr. Thos. R. Aldrich, of Georgia, by placing a male of the summer duck with the female of the common Mallard, produced a brood of hybrids; he retained a pair of the latter, and sent another pair to a friend on James Island, near Charleston. The females both in Georgia and Carolina laid a number of eggs, but in not a single instance were the eggs impregnated. Of the latter two species, we have in a very few cases, and after much search and labor in unfrequented marshes, found a few nests. Of the dusky duck, we saw three nests along the borders of Lake Champlain. We obtained hybrids between a male of the dusky duck and a female of the common duck, by keeping them together in a separate yard. Three of these hybrid females were suffered to run at large with the drakes of the dusky duck, the English and the hybrids. They laid a

* April 13th, 1847, p. 50.

large number of eggs for a succession of seasons, but we could not find that one had been fecundated. We have then to fall back on the Mallard. This species, as Audubon informs us,* is easily domesticated; the squatters on the Mississippi "raise broods which are superior even to those of the wild ones, for a year or two, after which they become similar to the ordinary ducks of the poultry yard." The Mallard, it is admitted by every naturalist, is the original species from which the domesticated duck has descended. If, then, as we suppose was the case, this young duck was of the Mallard species—and produced a fertile offspring with the common duck—it only multiplied with its own species, and therefore the product could not have been hybrids.

OTHER HYBRIDS.—The last paragraph in reference to birds which is noticed by Dr. Morton, refers to a hybrid produced between *Motacilla lugubris* and *M. Alba*—of a mixed crow, between *Corvus corone* and *C. cornix*, we would barely notice, as it does not affect our theory; for the object only is to show that wild birds sometimes produce a mixed progeny—whether fertile, we are unable to say—but presume not, as we never hear of their multiplying. Mr. Blythe, however, who is favorably quoted by Dr. Morton, and who has carefully investigated the habits of birds, informs us,† "the circumstances occasioning the alledged union betwixt the *Motacilla lugubris* and *M. Alba*, require much additional investigation;"‡ he doubts the union of the two crows, "inasmuch as the individuals were never examined and compared;" he inquires whether, after all, these supposed hybrids may not be mere varieties

* Orni. biog., vol. 3d, p. 168.

† Mag. Nat. Hist., new series, vol. 1st, p. 82.

‡ P. 81.

of the hooded crow, (*C. cornix*), which were occasionally seen in Ireland.

We shall for the present pass over the few cases of hybridity among reptiles, fishes, mollusks, and insects, which Dr. M. has found on record, since the cases, if they were even proved to be authentic, would only confirm our experience in regard to hybrids occurring among quadrupeds and birds; they were, in all the well-attested cases we have heard of, sterile, and in no instance produced a new race. The difficulty, however, of examining these lower, and as yet imperfectly known forms, should render us cautious in citing them as examples, since we can have easier access to animals which in organic structure approach much nearer to man.

In regard to hybridity among plants, all that Dr. M. has produced is contained in four short paragraphs, with an allusion to Prichard, Owen, and three other authors. The two former have borne ample testimony against his opinions on hybridity, and have advocated the doctrine of the unity of the human race. The essays of Herbert and Sagart on the *Amaryllidaceæ*, we have not examined. The result of our own experience on this head will be included in a single paragraph.

The facility with which plants may be fertilized by means of bees, and various insects, is nearly equal to those artificial modes of fertilization resorted to by gardeners to produce hybrid plants; yet if we look through the whole range of the American flora, how seldom have we known a hybrid to occur, even from closely allied species, that is now propagating itself and affording evidence of the fertility of its seeds. We were recently informed by the Rev. Mr. Curtis, a botanist of great accuracy and rising celebrity, that the acorns sent to Europe of those rare

species of American oaks that are supposed to be hybrids—from the fact that only a few trees have ever been found—were pronounced by a distinguished European botanist, as incapable of germinating. We have had in cultivation in our own garden, within the last ten years, upwards of two hundred varieties of hybrid roses, and still possess upwards of an hundred. From all these only about six bore fruit, and from three of these only did the seeds germinate; nor did any of them produce a rose precisely similar to the original plant. Dr. Carpenter states* that “hybrid plants have never been continued, without intermixture, beyond the fourth or fifth generation.” We have then to resort to budding, grafting, layers and cuttings to propagate any choice variety of Roses Orleanders, and the double-flowering plants generally; an evidence that the hybrid is constantly engaged in struggling to escape from its unnatural position, even though it perishes in the attempt. We may produce crosses between different species, but if we do not propagate these hybrids by artificial and unnatural means, they are sure to become extinct. Nature will perpetuate varieties, for this is in accordance with her operations; but refuses to multiply hybrids, for this is contrary to her laws.

We have now seen that with all the ingenuity of the believers in the fertility of hybrids, they have not been able to produce a solitary case in which they have clearly and incontestably proved that a single race of animals or birds has been perpetuated from hybrids of two or more species. Their vague assertions have been hazarded without proof, and have been contradicted by the experience of many eminent naturalists, whose general knowledge

* Vegetable Physiology, p. 279.

and habits of close investigation, have certainly given them equal claims on public confidence.

In one case out of an hundred,—such as the instances of the buffalo and common cow among quadrupeds, and that of the China and common goose among birds, which are the only two cases well attested—hybrids have been productive, but this did not continue beyond two or three generations, and could be prolonged only with the pure blood of either stock, and of course either died out or returned to their original species. We have no doubt that among a few species, especially the ducks, some may produce hybrids constituted like those from the China goose, to produce progeny for even two or three generations before absolute sterility occurs; we observed a cross of this kind in the Zoological gardens, between the common duck and some other European duck, we believe the shell-drake, (*A. tadorna*,) which was said to have been fertile for at least one or two generations. Of the remaining number that are recorded by Dr. Morton, the cases of hybridity may be set down as those of absolute sterility, since, had it been otherwise, the world would have been made acquainted with the important facts.

If new races produced hybrids by the intermixture of hybrids, why is it that all those hybrids have been found sterile? We will here give a list of a few of these. The horse and the ass; the quagga and the horse; the sheep and the goat; the goat and the deer; the ibex and the goat; the goat and the chamois; the black leopard and the African species; the lion and the tiger; the English rabbit and the hare; the sea lion and the sea bear; the guinea and the common fowl: the cock of the woods and the black grouse; the pheasant and the domestic fowl; the common and the silver pheasant; the canary with the linnet, sparrow, chaffinch, bunting, greenfinch and bull-

finch ; the throistle with the black-bird ; the Canada and common goose ; the goose and the swan ; the barnacle and the common goose ; the Muscovy and the English duck ; the teal and the duck ; the Mallard and dusky duck ; the widgeon and pin-tailed duck ; some reptiles, a number of fishes, and some mollusks and insects. We could add half a page to this list, and of these not a few were produced under our own eye ; but this would be superfluous. In all these cases, nature proclaims her determination to preserve the races in spite of all intermeddling with her operations. She stamps upon these unnatural offspring, the seal of sterility, and nearly all the cases that Dr. Morton has cited, and fifty more that are on record, are so many proofs of the errors in the theory of Col. Smith, and all who have adopted his speculative notions. Each new case of a sterile hybrid is an additional evidence in favor of our theory, that the laws of nature are opposed to the production of new races by the commingling of two or more species.

Nor should the fact be overlooked, that the occurrences in hybridity that are on record have taken place at very long intervals of time, and in most cases through the artificial agency of man. There is a repugnance among the wild species to such a union, and it only occurs when the individuals thus unnaturally paired are entirely excluded from those of their own species. Even should an attachment take place, the organic differences in the different species, in the majority of instances, prevents the production of any issue. Griffith mentions* that where the common cock had formed on association with the pheasant, "out of an hundred eggs, not more than two or three would hatch." Hybrids between the Muscovy and English

* Part 21st, p. 232.

ducks, as we have ascertained by raising them for the table for many years, are produced with very great difficulty. All birds, of either species, must be excluded not only from the sight of their own species, but out of hearing. Although a union may be effected, the eggs, even after the lapse of several weeks, are still not impregnated, until the season is considerably advanced, and even then more than half of them will not hatch. The same may be remarked in respect to the Canada and common goose. We possessed a male of the former, raised near Boston, from a pair of domesticated Canada geese that for three years refused to mate with a common goose, although they were kept separated from all other geese. A friend of ours, however, was more fortunate, and finally succeeded in obtaining sterile hybrids. We had for several years a male snow goose; (*A. hyperboreus*) he mated readily with the common goose, but no egg was ever impregnated. The hybrids from the Musk (*Carina moschata*) and English duck, and those also from the Canada and common goose laid eggs, but these were very small and few in number, and in no instance could they be hatched.

In reading the articles of Dr. Morton, we have frequently been reminded of another fact. Nearly all the examples which he has quoted that have an important bearing on this subject, are brought to us from so great a distance that we have not the means of investigating the accuracy of the statements, and courtesy would lead us not to deny that which we have not the means of disproving. But why carry us to Egypt, to the steppes of Tartary; to the Island of Java, and the wilds of Paraguay and Yucatan to ascertain the truth of the relations of Maga and De la Malle, the Beytræge of Rudolphi, the rambles of Capt. Stedman, or the interested collectors who sent to Temminck his

specimens of wild and tame cocks and Curassoes? Our own country has now been settled for two hundred and forty-two years. We have imported all the domesticated animals and poultry of Europe, and several of their wild species exist in our forests. Our Fauna is larger, and we possess every variety of latitude, from polar cold to tropical heat. How many hybrids have we found in the woods? We are under the impression that we possess two specimens of a hybrid between the gray rabbit and the swamp rabbit; but as no more of a similar kind were obtained, we presume they never propagated. We were moreover led to suppose, after carefully examining a pair in the museum at Zurich, that the bird at long intervals found on the continent, which was described by Leisler under the name of *Tetrao intermedius*, might prove a cross between the wood grouse (*T. urogallus*) and the black cock, (*T. tetrix*), owing to the fact that both species are very rare in many neighborhoods; and that individuals of each might associate together in the absence of their own species. The few specimens however that have ever been procured, afford evidences of their incapacity to propagate.

Col. Smith states that the domestic animals always make the approach to the wild. This is not in accordance with our experience. Have we ever known the goat or the sheep to go out and seek the deer? or the cow to make advances to the carabou, or the buffalo? or the hog to the peccary? Or have we heard that the hen of our barn yard looks for a mate from the pinnated or ruffled grouse? or that our domesticated pigeon sought for an association with the wild pigeon, or the Carolina dove? Have we not a right to suppose that the same prodigies that have occurred elsewhere, will take place here? Striking and permanent varieties, it must be admitted, have occurred

in our country, as they have elsewhere. The wolf, the squirrel, the deer, the black rat, the Norway rat, and the white-footed mouse, among wild animals, have produced their permanent varieties; and among the domesticated ones, the cow, the hog, the sheep, the peafowl, the Guinea hen, and the common fowl, have within our own memories, exhibited these phenomena. But from whence have these varieties been derived? Not surely from an intermixture of any two species, for there were no species with which they could unite; they have sprung up within themselves, and were not indebted to any foreign alliance for the changes which nature produced.

Near the close of his article Dr. M. offers a "word with respect to the theory of repugnance." He considers that the same repugnance that exists in the different species of animals, is also evidenced among the varieties of men; that "this repugnance is only partially overcome by centuries of proximity, and by the moral degradation consequent to the state of slavery." He adds, "not only is this repugnance proverbial among all nations of the European stock among whom negroes have been introduced, but it appears to be equally natural to the Africans in their own country, towards such Europeans as have been thrown among them; for with the former, a white skin is not more admired than a black one is with us."

We could heartily wish in behalf of good morals, that these views of our esteemed friend could be verified by our experience in regard to the two varieties to which he alludes. Charleston has from time to time received the majority of its male inhabitants from our Northern United States and Europe. Personal observation does not verify his assertions, that it requires centuries of proximity to remove this natural repugnance; on the contrary the proofs

are sufficiently evident, and to a melancholy extent, that if it existed on the day of their arrival here, it faded away not after the lapse of centuries but in a very few days. In regard to the Europeans in their own country, this repugnance is even less than in the Northern States of America. In passing through the small village of Stratford, which recalls to the mind of all travellers the memory of the bard of Avon, we observed on the steps of a neat cottage a well dressed and rather pretty white woman leaning on the shoulders of her husband, a full blood African. They were surrounded by their mulatto progeny. This family we ascertained was on terms of social intercourse with the neighbourhood. We also recollect having seen well dressed young white men and women walking arm in arm with negroes in the streets of Edinburgh, London, and Paris. However revolting this sight was to our American feelings, yet it did not appear to be regarded with the same repugnance by the communities in Europe. On the other hand the repugnance of the African in his own country to the white man, may be the result of the jealousy of the former on account of the superiority of the latter; but it is very evident that the white race has not only every where established its superiority over the African, but has won its way to all manner of intercourse. Nor does this repugnance exist between the Caucasian, the Mongolian, and other varieties. There are in Russia whole regions of country where many races from the Caucasian, and some from the Mongolian, the descendants of the ancient Huns, have intermarried for ages, and they are so blended that it is difficult to trace their several origins. This admixture of two or more varieties does not, on the one hand, appear to have had a deteriorating effect on the Caucasian, and certainly elevates those whose remote origin can be traced

to the Mongolian. In regard to the admixture of a superior with an inferior race in America, which in almost every case results in degradation and crime, it should be discountenanced by every lover of virtue, of good order and of sound morality.

CHAPTER III.

AN EXAMINATION OF THE CHANGES PRODUCED BY DOMESTICATION ON THE ASS, RAT, MOUSE, PEACOCK, AND GUINEA FOWL.

In a note* Dr. Morton says, "It is obvious that whilst cultivation produces obvious changes in some animals, its influence has had little or no effect on others; for example the ass, the rat and the mouse among quadrupeds, and the peacock, and Guinea fowl among birds. These species have been domesticated from immemorial time in all latitudes, and under every conceivable variety of circumstances."

We regard the above as an assertion hazarded rather hastily and without a due examination of facts. Our personal investigations have led us to conclusions directly the reverse, and we now offer them in confirmation of our previous arguments that every vertebrated animal from the horse down to the Canary bird and gold fish, is subject in a state of domestication to very great and striking varieties, and that in the majority of species these varieties are much greater than are exhibited in any of the numerous varieties of the human race. We will examine the species in the order in which they are presented in his paper.

THE ASS (*Equus asinus*).—This animal was well known to the ancients. The Onagar, the original wild ass, still

*P. 211.

exists in the deserts of Arabia, Tartary and Persia. The hair is fine, of a bright mouse colour, with black lists across the back and shoulders. Its forehead is greatly arched, it has long and erect ears, 10 inches in length, and a soft woolly mane. It is $13\frac{1}{2}$ hands high. This species is acknowledged by all the writers of authority as the origin of our domestic ass. This animal we are informed by Griffith* and Smith has produced varieties in Persia and Egypt "very different from the small and feeble natives of our climates, almost equalling the horse in size and form." In Egypt it is regarded as an elegant animal. At Cairo we are told the ladies of the Bey are mounted on this species as a more beautiful animal than the horse, whilst their bridles are glittering with silver and gold. The variety existing in that country is not only large, vigorous and active, but of an elegant form.—In Spain some of them are from 15 to 16 hands high. Individuals of this large size and fine form have from time to time been brought to Charleston. The sorry donkey of France and England is altogether of a different form, with drooping ears and a shaggy coat, and so diminutive in size that it appears almost an act of cruelty to mount a boy on his back. We have seen some asses that were black—others gray and finally several pure white.

THE RAT is the next example brought forward by Dr. Morton. He does not designate the species, but as there are only two, the black and Norway rats, to which he could by any possibility have had reference, we will examine both species. Originating in the Eastern continent, they have been transported to every part of the world where men carry on commerce by means of ships. They cannot however be said to be domesticated in the true sense

* Animal Kingd. vol. 3, p. 462.

of the word ; they take up their residence in our houses and in the vicinity, but use the liberty of following their tastes and inclinations in spite of our wishes and remonstrances. In order to domesticate them it would be necessary to breed them in cages, or in a state of confinement, to make them subservient to our wishes, like the dog, the sheep, swine, etc. This has never been done ; still as both species, have now a wide geographical range, and are more or less the occupants of the domicils, and fellow voyagers with man, we might reasonably suppose that they would exhibit varieties, as is the case in other species similarly situated.

The black rat, (*Mus rattus*) whose native region is Persia, was introduced into America with the first settlers. It is less abundant along the sea-board than the Norway rat, where it seems to disappear before the other species ; but in the interior and especially of the South, it is quite common, and on some plantations, in the middle districts of Carolina, is the only species that can be found. This rat has run into such striking varieties that naturalists, Gmelin, Rafinesque, &c., have already been at work in making several new species, and we would not be surprised if a variety that has now become permanent and very common both in Georgia and Carolina, and of which we possess many specimens, were soon to be described as an additional new species. Figures of this variety are given in plate 23d of the quadrupeds of North America. Its colour is grayish brown tinged with yellow. It is not an Albino. A number of specimens were obtained by Maj. Le Conte in Georgia. We have found in a nest of seven obtained in Charleston, three of the yellow variety, and four of the black. From the head waters of the Edisto River many specimens were sent to us alive, obtained by Mr. Fisher, a gentleman of close observation, who possesses

a fund of information in regard to animals. The great majority were of this peculiar colour so much resembling that of the brown rat, that without examining the form it might be mistaken for that species. We have seen a specimen with a grayish yellow head and black body. These varieties have, as far as our information will enable us to judge, originated in the South within the last fifteen or twenty years. We have always observed that when varieties occur in a species, they not only multiply rapidly, but soon run into other varieties. Hence we now have the black rat, the yellow rat,—and the black rat with white spots on the under surface like those of the mink. We will not stop to enumerate other varieties.

The brown or Norway rat, (*Mus decumanus*) is in regard to its geographical range and its attachment to the residence of man, similarly circumstanced with the above. Although in reality not domesticated, it has nevertheless from the mere fact of its wide dispersion adapted itself to its new situation, changed its habits, its form and its colour. In our cities, and country residences, it burrows in the ground, and cannot be made to mount a tree, although a terrier may be at its heels; whereas we have seen it on a small island near Charleston, which was overflowed at spring tides, resorting habitually to a hollow live oak tree, and when disturbed on the marshes where it fed on fiddlers, (*Gelasinus vocans*) it would immediately hurry to the tree and seek its shelter fifteen feet from the ground. In the large number of specimens lying before us, we find a striking difference in size: some with teeth much worn, an indication that they were not young, are a third less in size than others. The tails besides being naked in some specimens, and differing in length, are in others covered by much hair. They differ in the formation of skulls, some being narrow

and long, and others broad with blunter noses. They differ widely in colour—a specimen was described Dr. De Kay,* under the name of *Mus Americanus* which, from its black colour, some peculiarity in the teeth and annulations of the tail, he regarded as a new species. This same variety of the common rat we have obtained in Charleston from our friend Dr. Wilson and others, and procured others from a brood of young, in which the gray and black were found in the same nest, five being gray and three pure black. This variety has for several years past been increasing in Charleston. We are here reminded of a somewhat singular occurrence. Some years ago a vessel returned from the Pacific to one of our Eastern ports after an absence of three years. The rats had so greatly multiplied in the ship, that the usual method of suffocating them by sulphur, was resorted to. Several hundred rats were in this manner destroyed. On opening the hatches it was discovered that they were nearly all white, with red eyes. (*Albinos*.) Several of them recovered from the suffocation, and were sent to us as a new species. What there was in the ship or the climate in any of the Islands where they originated, to produce Albinos, no one can tell.

It will then be perceived that the brown or Norway rat has produced varieties, giving appearances of becoming permanent, some of which are deep black, and others pure white. How far we may be allowed to consider an Albino a permanent variety, we will not stop to inquire, farther than to state that in the white domesticated rabbit, the ferret and white mice, this is decidedly the case.

THE COMMON MOUSE.—(*Mus musculus*.) This is the only species of this genus that can be said to have been domesticated and brought under subjection. It has been kept in

* Nat. Hist. N. Y., p. 81.

cages for the last fifty years, under the familiar names of white and spotted mice. The white is an Albino, with red eyes. We have however seen in the same cage a mixture of colours; the little animals were spotted with red, yellow, black and white. Wherever there was a departure from the white colour, the red eyes disappeared. In several instances broods of white mice of this species were brought to us, from their wild state, that had no connexion with those in cages, and in one instance we received a family of the spotted ones. There is a variety of this species that has strayed from our houses in Carolina, and resides permanently in the fields. Its colour is several shades darker than that of the same species found in houses, and from its habit of feeding altogether on grains, has lost the offensive smell exhibited by the other individuals that have access to flesh, etc. The house mouse has therefore produced varieties of various colours, and these varieties are permanent, and would, if kept separate, continue so.

THE COMMON PEA FOWL (*Pavo cristatus*) still exists in great numbers, in a wild state in India, although it has long been domesticated and admired for the unsurpassed beauty of its plumage, it is rather kept for ornament than use, on account of its being less prolific and more troublesome than other poultry. It yields even now reluctantly to restraint; loves to roam at large, and selects a tall tree, or house top, as a roosting place, in preference to the much dreaded poultry house—nevertheless this half-tamed bird has produced most striking varieties—we have observed it on the pleasure grounds of England, and on the continent, under a variety of colors, white, spotted, brown and black; one variety has a peculiar tuft on its head, like the tail of a long-tailed European titmouse. A pair of the white

variety that are Albinos, brought from Europe by Dr. Davis, we have recently seen in Charleston. When the bird is pure white the eyes are red, but where only a few feathers are of a different colour, the eyes partake of the colour of the original birds. We will in confirmation of the disposition which this species has of late years evinced to produce striking varieties in England, add an extract from the notes of Sir Robert Heron, Bart.* “The Japanned breed, are I believe, a variety originating in England. In Lord Brownlow’s numerous breed of common white, and pied, the Japanned suddenly in my memory appeared amongst them. The same thing happened in Sir Trevelyan’s flock of entirely the common sort; also in a breed of common and pied, given by Lady Chatham to Mr. Throlon; and in both cases to the extinction of the previously existing breed.”

The facts here stated are most important, as they go to prove by evidences presented to our senses how suddenly and unexpectedly varieties spring up in particular localities, and when once formed, increase so rapidly as to cause the extinction of the previously existing varieties. This is an important fact in several other particulars. The Japan peacock has long been described as a distinct species. (*Pavo muticus*). It has even a different cry from the common bird. Its existence at first rested on a painted figure sent by the Emperor of Japan to the Pope. Levaillant sent to Temminck a drawing from nature of the head of this bird, it having a peculiar top knot, which he had seen at the Cape. From this time it was admitted into our systems as a true species. Now it is discovered that this variety originated among the common species precisely as it does in Japan. So in regard to the white peacocks. Frisch

* Journl. Zool. Soc. 1835, p. 54.

and Willoughby contended that the white peacocks were aboriginals of Sweden, but no ancient author had mentioned their previous existence. Finally, Sonnine in the French Cyclopedia set this matter at rest by proving that at Gentilli, near Paris, out of four young peacocks two preserved the colour of the parents, and two were white; and that there was no other white peacock in the village.

The Guinea fowl, (*Numidia meleagris*) like the peafowl, has ever been restive under the restraints of domestication. It has an aversion to the poultry house, and flies to the fields and brushwood to deposit its eggs. In Cuba and Jamaica it has returned to the wild state, and is there hunted like the partridge with pointer dogs. The wild species is uniformly slate coloured, speckled with small white spots. Four very distinct and permanent varieties of this bird now exist—three of which have been known for more than fifty years. They are referred to in Turton's Linnæus and in Rees' Cyclopedia—one with double fleshy wattles at the bottom of the cheeks, another with a white breast, a third pure white; a fourth of an intense black colour has originated in Carolina within the last four years. It is worthy of notice, also, that these varieties are constantly springing up in various localities without an intermixture of the original stock with any of the varieties. About twenty years ago, we observed in a flock of Guinea hens five or six young with white breasts, they were still with the parents which were of the original colour, and we were informed there had been no intermixture for the previous twenty years. We obtained a pair of these white breasted birds. On the following year several of their progeny were white; we preserved these, and soon had a stock of at least fifty that were pure white, but not Albinos. The wattles in several were double, and in a considerable number had

nearly disappeared ; but these two latter peculiarities were not confined to any variety. We received from a friend a female black Guinea fowl, several of which had originated in his flock of the common colours. The characteristic white spots had entirely disappeared—it had mated with one of the original colour, and we soon had several black ones together with others of various shades of colour. From our own observations we are led to conclude that in this species of poultry in Carolina, the great majority will be found to have departed from the original types, and are now varieties. The Guinea hen then, like all poultry in a domesticated state, has run into varieties, and can be found in all intermediate colours between black spotted and pure white. What finally will be the prevailing colour, no one can do more than conjecture. The speckled colour will, we think, disappear, and the bird will, like the common fowl, exhibit every variety of colour.

CHAPTER IV.

CONCLUSIONS DEDUCED FROM THE INFERTILITY OF HYBRIDS IN ALL THE INFERIOR ANIMALS, AND THE FERTILITY IN ALL THE RACES OF MEN.

We have now by the slow process of careful and laboured analysis, and with all the knowledge and experience we could bring to our aid, examined all the cases of hybridity that seem to require our notice in the paper of Dr. Morton. If we could recollect any others on record in favour of his theory, that he has omitted, we would not withhold them from our opponents ; but he seems to have gleaned the field so industriously that he has left very little for his successors to gather. If we have taxed the patience of our readers by entering into details on subjects with which the

majority of them are not expected to be familiar, we crave their indulgence, as the establishment of this point is one of the strong weapons that we intend to wield in defence of our theory, in regard to the unity of the races, and if possible in demolishing that of our opponents.

They are fully aware of the long established and undeniable fact that all the races of men in every age, and in every country produce prolific offspring in their association with each other. That the Caucasian, Mongolian, African, Malay, and the aboriginal American, all are affording us the most convincing evidences of this fact. That in this manner many new intermediate races have been produced on the confines of Asia, Africa and Europe, and that within the last two hundred years, a new race has sprung up in Mexico and South America, between one branch of the Caucasian and the native Indian, together with no small admixture of African blood. They are aware that in the United States, whose first permanent settlement commenced in Virginia in 1607, the two extremes of African and Caucasian have met and produced an intermediate race. We know them to be fully as prolific, if not more so, as the whites, where their constitutions have not been wasted by dissipation. We will not stop to inquire whether this race is equally as long lived as either of their originals; but even here we would find no difficulty, as no one will be disposed to deny the fact that some races of the pure Caucasian, the Mongolian and African families are more robust and longer lived than others. The facts, however, are undeniable that all these half breeds are prolific with each other, and we can point out at least the descendants of five generations, both in Carolina and New York, where there has been no intermixture with either of the original varieties; and they are to this day as prolific as any of the

other races of men. We are aware that laboured articles have been written to show that the descendants of the two races, especially those between the Caucasian and African, in the process of time, become sterile. We have not, however, of late, heard this argument insisted on, and we believe it is virtually abandoned. The learned researches of Dr. Morton, (*Crania Americana*), which is characterized by great knowledge and sound discrimination will, we think, set this matter forever at rest. We regard his "Essay on the varieties of the human species" as condensing in a hundred pages as much valuable information on this subject as is contained in any similar work to which we have had access. Although we are constrained to state that on an examination of the valuable materials he has presented to us, we have arrived at different conclusions from those to which his mind seems to lean, and differ from him in our views of the origin of the Native American families, we must nevertheless admit that the world of science is greatly indebted to him for the faithful manner in which he has collected his materials, and the judgment he has in most cases evidenced in arranging them. The accounts scattered throughout his learned essay, of the many intermediate tribes of nations that have derived their origin from an admixture of Mongolian, Malayan, American, Caucasian and African blood, are calculated to convince all who have hitherto entertained any doubts on this subject that not only these widely separated, but all the varieties in the human species, produce in perpetuity an intermediate and fertile progeny. Malte Brun,* speaking of the Portuguese in Africa, says: "The Rio South branch is inhabited by the Maloes, a negro race, so completely mingled with the descendants of the original Portuguese as not to be distinguished from them. Several writers inform us that

*Universal Geog., vol. 4th, p. 227.

there is a large and growing tribe in South Africa called the Griqua, on Orange river, being a mixture of the original Dutch settlers and the Hottentots, composed of more than five thousand souls. These are referred to by Thompson and Lichtenstein, in their travels in South Africa. Several similar races, a mixture of the African and Spaniard or Portuguese, exist in South America, separated from other communities. The last calculation we have read of the population composed of the mixed races, in North and South America, amounted to upwards of five millions.

Inasmuch as all these facts were self-evident and undeniable, as could be testified by thousands of examples which presented themselves in every neighborhood, and in every land, so that it now has become a matter of difficulty among many bordering nations to designate the precise origin of millions of the inhabitants of the earth, our opponents have recently evidenced a disposition to rest their cause on a different foundation. The infertility of hybrids has always been a stumbling block in the way of their theory. If the races of men produced fertile offspring with each other, and the races of inferior animals did not, if the latter were found to be barren and unfruitful, and the former increased and multiplied, and replenished the earth, then they would be obliged to prove that man was an exception to this universal and invariable law that regulated the whole of the inferior creation. They possessed no evidences to prove this; for although man in his moral nature is endowed with high intellectual powers, yet in his physical nature he is an animal, coming into the world like other animals, and like them returning to the dust. In this dilemma they resorted to the desperate expedient of endeavouring to show that in respect to the fertility of hybrid offspring man was not peculiar;

that many races of animals could be found possessing the same physical powers of producing intermediate and fertile races. Hence they have ransacked the almost forgotten tales of ancient travellers, and dragged from obscurity the vulgar errors long hidden beneath the dust of antiquity, and indulged themselves in conjectures and doubts, in order to weaken the faith of men in the long established views of naturalists in regard to the sterility of hybrids. Our object has been to show the frail tenure of the foundation on which they leaned for support, the many errors which they triumphantly paraded as facts, and the weakness of the arguments by which they sought to build up their theory.

We have shown from the examples of hybridity which they have so industriously collected that in nearly all the cases where a proximity of species permitted the production of hybrids they proved absolutely sterile; and that in the few remaining examples, nature was incessantly at work to restore the irregularity which art or accident had produced, and that these hybrids either died off, or if they continued for a short time, returned to one or the other of the original race.

They have not been able to point out in the whole range of animal creation a single example of a new race that was established and perpetuated by hybrids. They have not been able to bring a shadow of evidence in favor of their doctrine that varieties were in even a single case the result of any intermixture of species, since the most striking varieties exist in races where we can positively trace them to their original source—a single species far removed from any other. They made this new issue; it was required of them to produce such facts in support of

their theory as would convince the inquiring student of nature of the truth of their theory. Would any jury of unbiassed men find a true bill on such surmises, conjectures, doubts and palpable errors as have here been arrayed as evidences against the doctrine of the unity of the human race ?

We may then be permitted, in this stage of our argument to draw the following conclusions :

1. Nature, in all her operations, by the peculiar organization of each species—by their instinctive repugnance to an association—by the infertility of a hybrid production, when by art or accident this takes place,—and by the extinction of these hybrids in a very short period of time, gives us the most indubitable evidences that the creation of species is an act of Divine Power alone, and cannot be effected by any other means.

2. That no race of animals has ever sprung from a comingling of two or more species.

3. Domestication in every species that has been brought under subjection, produces striking and often permanent varieties, but has never evolved a faculty to produce fertile hybrids.

4. Since no two species of animals have ever been known to produce a prolific hybrid race, therefore hybridity is a test of specific character.

5. Consequently the fact that all the races of mankind produce with each other a fertile progeny, by which means new varieties have been produced in every country, constitutes one of the most powerful and undeniable arguments in favour of the unity of the races.

CHAPTER V.

DIFFICULTIES IN THE THEORY OF A PLURALITY IN THE RACES OF MEN.—A GENERAL SUMMARY OF THE CHARACTERISTICS WHICH ARE UNIFORM IN ALL THE RACES.

Thus far we have acted on the defensive. We have met and grappled with our opponents in all the points in which they conjectured our citadel was weak or unguarded, and where they imagined their success was attainable. We have traced their stratagems and manœuvres, and listened to their shouts of fancied victory, but our castle still remains unshaken, and they have not succeeded in removing even one picket that guards the outposts of our strong fortress. We may now be permitted to assail them in turn and carry the war into their own camp, by pointing out the very great difficulties that present themselves against their theory.

1st. We have seen in every species of animal or bird that has been subjected to domestication, that as striking and permanent varieties have arisen and are daily occurring, as exist in any of the varieties of men. The original species, both parties in this discussion admit, were a miraculous creation of God. All the varieties of inferior animals, we all agree, are the results of the organization of the several species, by which they are enabled to produce varieties. They now contend that the varieties of men are all species—original creations; some go so far as to assert that they are composed of different sub-genera, each containing many species. Consequently by their theory God must have performed a miracle at the creation of each species, when by our theory, all these effects are produced—

all these endless varieties are formed without a miraculous interposition.

They have sometimes accused us of superstition—of blindly yielding to authority without being governed by sound reason ; have they not made themselves amenable to these charges in ascribing that to miraculous intervention, which it is proved can be carried on by natural causes, numerous examples of which are before our eyes?

2nd. Taking it for granted that they admit, that in our examination of man as a species, we must be governed by the same laws by which we examine all the species of animals in a domesticated state—they who have made this issue and denied the long received doctrine of the unity of the human race, are now required to show those characteristics which will justify us in regarding the varieties of men, as distinct species, whilst they consider those of animals equally striking, not as species but mere varieties.

3rd. We will call their attention to a single species among wild animals. The common wolf (*Canis lupus*) has been described by Linnæus, Buffon, Cuvier, and all the eminent naturalists who have written on the mammalia of Europe, as identical with the wolf of America. Sir John Richardson, Dekay, and recently Audubon and Bachman, on the history of American quadrupeds, agreeing with the views of European naturalists, have placed all the large North American wolves, (not including the small prairie wolf) as varieties of the European wolf, and even Colonel Smith himself † says, “ our somewhat extensive researches lead us to subscribe” to the opinion of the Prince of Wied “ that they are the same.” This wolf is like man, a cosmopolite, and has spread over a considera-

† Naturalist's Library, Vol. 4, p. 154.

ble portion of the world. It exists on the Eastern continent, in Greenland, Norway, Lapland, down to Japan and China on the East and South, and Africa on the West. In America it has extended through Behring's Straits, Newfoundland, Canada, and the Russian settlements on the West—through the whole of the United States on the East, and is found in Florida, Texas, Oregon, Mexico and South America. Here we have an animal whose geographical range is wider than that of any species among the inferior animals, and is only exceeded by that composing the human race.

Let us now examine how these changes in climate, food, or some other influences at present hidden from our knowledge, affect this species. In colour it is white in the Northern regions, and in the elevated countries on both continents. In the temperate latitudes of Europe and America it is gray. It is black in the South, as in Florida, Georgia and Louisiana. In the Western part of Missouri it is clouded and has been named *Canis nubilus*. In Texas it is red. These varieties differ vastly in size, those of the North being nearly double the size of those of the South. They differ in the conformation of the head and the skull. In an examination to which we were invited, of the wolves preserved in the British Museum, and those contained in the gardens and museum of the Zoological Society of London, all the naturalists present expressed their surprise and perplexity at the vast differences existing not only in colour, but in size, form and skull in different specimens—in cold climates their heads were broader and muzzles shorter than in those found farther South; still we found individuals which like links in a chain, connected all these varieties so closely, that they could not be separated into different species. Thus naturalists after an examination

for two hundred years, of all the varieties of the wolf, are obliged to admit that this wide roaming animal, which changes its form and colour at every remove to new regions is one and the same species. Colonel Smith has stated somewhat inconsistently with his other assertions,—“It deserves to be remarked of the white wolves as well as the black, that neither intermix with the common variety, though they occasionally reside in the same countries.”† This is an error. The white wolf of the North and West associates freely and produces with the gray wolf in the neighbouring regions for hundreds of miles in extent. The black wolf of Florida, where the race appears permanent, strays occasionally through Carolina and as far to the North as Pennsylvania, whilst the gray wolf of the middle States often travels as far to the South as Florida. In Carolina, the point of meeting of these varieties, they are so blended in colour and form, that we are scarcely able to distinguish the varieties. An intelligent planter of Colleton District, S. C., from whom we had requested information, informed us that in a gang of wolves, out of which fourteen had been killed in a year, they could not find two alike; several specimens similarly marked, we had opportunities of examining.

The question now arises, are all these strangely marked varieties which are permanent in certain regions where each propagates its own variety, and has done so from our earliest knowledge, but every where associating and multiplying with neighbouring varieties, to be regarded as miraculous creations of separate species, or are we not able to trace all these variations to the original constitution of the wolf, adapting it to the various climates and situations in which it takes up its residence, and to its

† Naturalist's Library, Vol. 4, p. 155.

instinctive impulses to a wandering and migratory life? Are there any more distinctive marks in the skulls, in the colours, and in the habits of the varieties of man than are found in those of the wolves? and if not, what reasons can naturalists assign for admitting the races of wolves as mere varieties, and yet insisting that the races of men are distinct species?

4th. We submit to the advocates of the diversity of species in the human race another question. Are the differences by which they would separate the races of men into distinct species greater than are known to exist among the various species of domesticated animals? As an example we will select the horse, (*Equus caballus*.)

We have already shown, that under all its varieties, it is undoubtedly of one species, since it is the only true horse, either in a wild or domesticated state; the other species being either zebras or asses. All naturalists of high authority, admit and have contended, that it has descended from the same stock. This animal, the early companion of man, when transported to Flanders, produced the great dray-horse found in the streets of Liverpool and London, and in Pennsylvania, with an enormous head, short neck, a heavy clumsy body, legs eighteen inches in circumference, and hoofs too large to be received into a peck-tub; the animal being of sufficient strength to draw a load of four tons on the level ground. This breed is permanent, and has been multiplied without any diminution in size for at least several centuries. From this variety, has been produced by admixture with other races, the French coach horse, the Canada horse, etc. Now, let us look at another variety that has sprung up on the Shetland Islands, and is in common use on the Hebrides and mountains of Scotland, and we perceived was the only animal used by the ladies

in their ascent up the mountain of Ben Lomond. A few of this variety exist in America. This little animal is not only of a different form, but not one-seventh the size of the other. In the marshes of Carolina, we have a peculiar breed of small horses called marsh tackies, that differ both in form and size from the other breeds in common use. They are hardy and sure-footed. We have seen many of these with shaggy coats and two kinds of hair, the outer coat long and rigid, and the inner, soft and woolly, like that of the buffalo. We have reason to believe, that it was one of this variety recently exhibited at New York, as a new species of quadruped, said to have been captured on the River Gilla by Capt. Fremont, who, it is needless to add, probably never heard of the animal. We are all acquainted with the elegant forms of the Arabian horse, and the English racer; we have it daily in our own power, to compare the latter at least, with the so called Kentucky horse, which is so common in the South.

The advocates of the diversity of species in the human race, are always selecting for comparison, examples from the extremes among the race of men, the most perfect head of the Caucasian, and the most depressed forehead, and all the other peculiarities in the negro. Let us now place before us, the two extremes in the varieties of the horse. The dray horse and the Arabian horse, or the English racer, the latter from a comparison which we were enabled to institute at the residence of the wealthy Prince of Taxis at Ratisbon, where many individuals of all the finest breeds were preserved, was superior to the Arabian horse. Or let us compare the Shetland poney, or the Carolina marsh tackey, with the dray horse on the one side, or the full blooded horse on the other.

Will the advocates of a plurality in species in men,

point out those distinctive marks, which would make the various races of horses of all sizes, forms, and colours, each propagating its own kind when kept separate, as only varieties, and yet insist that the varieties of men are distinct species?

5. The same comparisons we are allowed to institute, in regard to the common domesticated cow. Of its origin, we have already spoken. Naturalists are not fully agreed as to the origin of some domesticated cattle of India and Tartary, of which little is at present known. Cuvier supposed that the wild bison of the Polanders, which he names *Bos urus*, was not the origin of our common cattle, but refers our "numberless domestic varieties" to *Bos taurus*. We will not detain the reader by giving the result of our examinations on this subject, since it must be borne in mind, that in regard to those breeds known in Europe, and transported to America, they are all referred to one species. From this animal, have descended cattle of all sizes, and of every conformation of skull—some having immense horns, as in Abyssinia and Western Louisiana, as long and as thick as the tusks of the elephant—whilst other breeds are altogether destitute of horns, such as the Galoway breed, originating in a wild district in Scotland. This same breed of hornless oxen, according to D'Azara, has originated in Paraguay, from progenitors possessed of horns. Some with humps on their shoulders, some with large pendulous ears like the Brahmin cow—some with long manes—some of the size of a small elephant, having been known to weigh from 3500 to 4000 pounds, and others, like the Surat ox, the size of a large dog. They differ in colour, some breeds being uniformly brown, some black; some spotted, and others pure white. A collection of the skulls and skeletons of the various breeds of domesticated

cattle as existing in our own country alone, would, even if we excluded every variety in Asia and Africa on which some doubts still exist, read to us a lesson on the tendency of domestication to produce changes in osteological characters, that ought to shake our faith in the plurality of the human race.

If men are of all colours, black, brown, red and white, so are these cattle. If the various races of men are all prolific with each other, so are the varieties of cattle. If they differ in their skulls, these cattle differ from each other much more, not only in skull, but in the size of their ears, length of tail, in height, and in form of body. If they will make five, ten, or an hundred species of men, why do they not carry out their principles, and make five, ten, or an hundred species of common cows, their varieties being fully as numerous, their breeds as permanent, and their characteristics as various as those found in the human species? The cow is the companion of man in all climates, and hence its numerous varieties.

6. We would point out to the advocates of the diversity of the races, those varieties that have taken place in our swine. They have all descended, as we have already shown, from the wild boar of the Eastern Continent. Men speak of the changes in human skulls, and therefore regard them as different species. Let them examine the original wild hog with its dusky brown colour, its short rounded ears, head placed on the same line with the trunk, and its tusks protruding several inches beyond the mouth—and compare it with the Siamese breed, with the back hollow, the belly trailing near the ground, in consequence of the shortness of the limbs—the bristles soft, approaching to the character of hair—with the small black Chinese hog, brought to Europe by navigators, weighing on

an average fifty pounds; and with the Berkshire hog, which has reached the weight of twelve hundred pounds. Some breeds have short noses and broad skulls—others with narrow heads and long snouts; some breeds are uniformly black, some white, and others spotted. If they insist on our accounting for the varieties of men, we have a right to insist on their accounting for the changes that have been produced in the skulls and skeletons, the colour, the shape and size of these prominent breeds of hogs. The pigs conveyed in 1509 from Spain to the West India Island, Cubagua, then celebrated for the pearl fishery, degenerated into a monstrous race with toes half a span long.* Those of Cuba became more than twice as large as their European progenitors.† And here we would ask those who are so anxious to divide the races of men into different genera, to select a genus for the hog with a solid hoof, a solid ungula, existing in Hungary, where there is no other variety for a distance of forty miles, in that now distracted land. We would ask them also to account for the fact that along the Red River, in the distant West, the same variety has recently made its appearance, and is multiplying faster than the other breeds. The inhabitants had made no importations of this variety, and were greatly astonished, when in answer to their inquiries we informed them that the same phenomenon existed on the Eastern Continent. This variety that has so widely departed from the characteristic type of the genus, may now be multiplied to any extent. Let them look at another wide departure of the domesticated hog from the original constitution of the wild animal. The wild hog produces young but once—the domestic sow has two litters in a year—the number of its young is much greater; it also often brings forth monstrous fœtuses, and

* Herrera, *Hechos de los Castellanos en los Islas, etc.*, vi., p. 273.

† Clavegero *storia antica del Mexico*, v. 4, p. 145.

is subject to measles, a kind of hydatids,* not found in the wild boar. We may here add that the wild goat produces but once, whilst the same animal when domesticated produces young two or three times a year.

7. We would suggest to the believer in the plurality of the human race, to compare our many varieties of the common sheep with each other. We have already shown their common origin. From *Ovis aries* has sprung the small Merino sheep, on the mountains of Spain, with wool like silk, and the large South down sheep with long coarse wool, and five times its size and weight. The Bakewell breed, originating in our day, in England, transported to this country, is as permanent a breed, if not mixed with others, as the Caucasian, Mongolian, or African races of men. From the former has also sprung the African sheep, large, active and goat-like, altogether destitute of wool, and covered with short hair, and scarcely to be recognized as a sheep—a pair of which may be seen at the farm of Dr. Ramsay, near Charleston. It should be remarked that the same peculiar variety sprung up among the common sheep that had been transported to the opposite continent of South America. We would direct their attention to the Cretan or Wallachian sheep, figures of which are given in the Penny Magazine,† its horns are large, rising perpendicularly from the skull, and spirally contorted; and its body, instead of wool, is covered with long, fine and straight hair. We refer them to the examination of the short-tailed, the long-tailed, and the bearded sheep; to some breeds with two, and others with four and six horns. We have not alluded to one tenth of the varieties that are daily springing up in every part of the world. The differences consist not only in size, in the character of hair or horns, and in pendulous ears, loose,

* Blumenbach *Abbildungen Natur. Historischer Gegenstände.*

† May 1836, p. 490.

hairy dewlaps, but in the shape of the head, the contour of the body, and the length and thickness of the limbs. If some naturalist, governed by external forms, should insist, as has already been attempted, that the Hottentot and Bushman, of the Cape of Good Hope, are of different species that should be separated from others, because their women have an enlargement below the hips, we would inquire of them whether it would not be equally proper to make a new species of the sheep existing in Asia Minor, with an enormous enlargement of the crupper; a large mass of fat covers the buttocks, occupying the place of the tail; the protuberance when viewed from behind, appears like a double hemisphere;* it fluctuates whilst walking like the buttocks of the Hottentot; and this mass is nearly equal in weight to the whole body of our New England Otter sheep. With equal reason they might make a new species of another variety found at the Cape of Good Hope, in the very neighborhood of the Hottentot, whose broad fat tails afford a delicious feast for a Mayor and a whole board of Aldermen, weighing from thirty to forty pounds, and are so heavy that we have seen them supported by a pair of wheels.

We would ask the advocates of the theory of the plurality of the races to institute a comparison between the varieties found in the dog of every conformation of skull,—some with elongated muzzle and flat forehead—others with short convex forehead; differing also widely in size and instincts, from the St. Bernard dog of the Alps and Mt. Blanc, nearly of the size of a two years old heifer, and the small lap dog that we have seen ensconced in the rich sable muffs of the Parisian ladies; the gray hound that hunts by the eye, and is as swift as the wind, and seldom barks, and the deer and

*Pallas *Spicelegia Zoologica fascie*, ii. p. 63.

fox hound that are guided by the nose, and give tongue at every leap ; the pointer and the setter that stand at the game ; the retriever of recent origin that finds and brings it instinctively without a moment's training, and the cur that runs after it and cannot be taught to point ; the shepherd's dog whose only instinct is to guard the sheep and goats, and the terrier that riots among the rats ; the Newfoundland dog with long shaggy hair, web-footed and aquatic in his habits, and the Mexican dog that is naked, and other breeds possessed of an additional toe. We are aware and have so stated it, that naturalists are not fully agreed about the origin of the dog—this however does not affect the question now under discussion. That he has been derived from an admixture of several wild species, we deny as contrary to the laws of nature and without a solitary fact to substantiate it, and we call for the proof. And here we would remark, that in order to prove the identity of species, it is not necessary to show that they ever existed in a wild state, or that they now are feral. The sheep was the companion of man as early as history affords us light on the subject, and the dog so essential to guard the flocks must have been trained immediately afterwards—he may have been given to him, from the beginning without ever having been wild. Some of the wild dogs evidently escaped from domestication, many of them are known to have grown wild in India, South America, Mexico, and Cuba, and if we cannot trace the species to any of the wild breeds, we have no right to adopt the very improbable notion that the varieties were produced by an intermixture of many wild species. In a very recent publication on the history of the dog, written by Youatt, this subject has been more thoroughly and more scientifically investigated than in any work that has ever come to our notice. The author

nowwithstanding all the previous speculations of Colonel Smith, arrives at the following conclusions—"It is probable that all dogs sprung from one common source, but climate, food and cross breeding caused varieties of form, which suggested particular uses; and these being either designedly or accidentally perpetuated, the various breeds of dogs thus arose, and they have become numerous in proportion to the progress of civilization. Among the ruder or savage tribes they possess but one form; but the ingenuity of man has devised many inventions to increase his comforts; he has varied and multiplied the characters and kinds of domestic animals for the same purpose, and hence the various breeds of horses and cattle and dogs."*

All the varieties of the dog are as distinctly marked and are as permanent, unless bred and mixed with other varieties as the various races of men, and they equally deserve a separate place in the table of genera and species.

9. We would direct their minds to the feathered tribes brought under subjection, and they will discover that domestication has produced in them, the same changes that are known to exist among the various races of quadrupeds, and of men. Among our common fowls, we have some with long legs and necks, enabling them whilst standing on the ground to feed from the top of a barrel, whilst others have short legs with bodies touching the ground. Whilst some breeds weigh nearly as heavy as the turkey, others, like the smaller breeds of bantam fowls, are not much larger than the partridge, with legs booted and feathered, including the toes. We have fowls, with uniformly frizzled feathers—others covered with feathers resembling hair,—some with double, others with single combs—some with smooth heads, and others with an enlargement of the

* Farmer's Lib. Vol. 2d., p. 227.

skull, on which rises a most conspicuous top-knot, and with muffled jaws. We have some species with long erect tails, containing a few pendulous feathers,—others with drooping tails, and finally, a breed in which the tail, together with the rump, is wholly absent.

10. The turkey has only been domesticated for a comparatively short period of time, and it now presents itself under all colours, and of various sizes: the flesh is diffused throughout the body, whilst in the wild turkey, it is most prominent in the breast. The latter, also, has a thinner and longer neck, a smaller head, a different conformation of skull, smaller wattles, and less of that peculiar appendage on the breast, called a beard.

11. All the varieties of the common goose, have originated from the wild lag goose of Europe, (*Anser cinereus*.) In this, all naturalists are agreed—yet, how widely do they differ in form, size, and colour. The Bremen goose, one of its varieties, is not only permanently white, but has been known to weigh upwards of thirty pounds.

Our domesticated ducks have originated from the mallard, which is wild and still abundant on both continents. This is attested by the unanimous decisions of all naturalists. How numerous are the varieties of this species! We have in Carolina, no less than six distinct and widely differing varieties, each, when kept separate from others, will produce its own variety through succeeding generations. We have the small pine-land or puddle duck, as it is called, with short neck and legs, the body marked by patches of various colours, and in a characteristic habit, sitting on its eggs like a fowl. We have the so-called Madagascar duck, larger in size than the last, and of a mottled yellowish brown colour, and the East India duck, with long neck and a heavy body, known by a white

line running from the bill, through the eye to the back part of the head; the two latter are constant layers, but seldom sit on their eggs. We have a permanent breed, pure white in both sexes, with large top-knots. We have for some years past, raised several hundred of what are called, the Penguin duck—they originated in England, and our original stock was sent to us by the Earl of Derby. Their anatomical conformation is such, that they stand erect like the Penguin—hence the name,—their cry is so different, that they can be distinguished by their notes, from the others. There is a breed in England, with a hooked bill, (*Anas adunco*,) remarkable for a distortion of its beak. Another breed has recently been brought to our city, by Dr. Davis: they originated but recently in England, and are called the Aylesbury duck; they are white, and nearly of the size of a goose. By the rules which govern naturalists in their designation of domesticated species, these varieties are all regarded as one species, and no naturalist would risk his reputation in pronouncing a different decision. Are not, we ask, these varieties as permanent and as widely separated, as are the varieties of men? And if we cannot separate the races of common fowls, turkies, geese, or ducks, what authority have we in separating the races of men into different species? We cannot in this place, omit noticing the important fact, that whilst an admixture of the China and common goose produces no varieties by an association of their hybrids, which soon degenerate and become sterile, or return each to the original species, each separate species, when unmixed with the other, produces striking and permanent varieties. The China goose, that has been domesticated only for a comparatively short time, has but recently commenced producing varieties. It is a native of the central and

oriental portions of Asia. It is characterized by a black coloured protruberance surmounting the base of the upper mandible, and a feathered wattle under the throat ; back and upper parts grayish brown ; abdomen white, legs orange. It is in its wild state, a small goose. Several varieties have sprung up—one of which is pure white, called the Poland goose ; when preserved unmixed with the common goose, (in the latter case, degeneracy and sterility occur,) we regard it as the best variety for our Southern States. There is another variety with bill and legs black, and a third which now exists on the farm of Dr. Ramsay near Charleston, with all the characteristics of the original species, but nearly of the size of the swan.

13. We would yet invite the attention of the advocates of a plurality in the human race, to an examination of the varieties that are found in the domesticated pigeons. They have all originated from the rock dove or wild bisset, (*Columba livia*.) of Europe. In its wild state, it is uniformly of a bluish colour, with a green neck, and a double band on the wings. From this plain bird has been produced an endless variety of pigeons of every form, size, and colour. It is the origin of the runt, nearly of the size of a common hen, and of the tumbler, but a little larger than the robin. Of the rough-legged pigeon, the crested pigeon, the laced-winged pigeon that cannot fly, the hairy pigeon, whose feathers appear converted into 'hairs, the fan-tailed, the cropper, the powter, the carrier, and an immense number of others, the enumeration of whose varieties would fill a page. Since naturalists cannot establish a rule for the designation of one species or variety of domestic man, which they should not be willing to apply to the varieties of domesticated animals, we would ask them to point out those distinctive characters, by which the varieties of men

are divided into many species, and the varieties of the pigeon are all included under one species?

We may conjecture what will be their reply to these questions. They will inform us, that although these varieties are as striking and as permanent in character as are those in the races of men, yet, as we know that the former have originated from well known species, and some in our day, they cannot, therefore, be mistaken in setting them down as mere varieties; but as they cannot trace the origin of the human races to their original source, therefore they will regard them as different species. But we ask, is not this one of those arguments which is not admissible? Is not this depending more on the history of a species, as far as our imperfect knowledge extends, than on those distinctive marks which are stamped upon the races themselves? Would not this uncertain mode of deciding on species, throw the science of natural history into inextricable confusion? You would here place a dependence on uncertain tradition, whilst the characteristics which nature presents, the only guides to truth in matters of science, are abandoned.

14. If our space would permit, and we were not fearful of trespassing too much on the patience of our readers, we would show from the history of every domesticated species of quadruped or bird, that they all, without a solitary exception, have branched out into striking and multiplied varieties, and that these varieties have become more numerous and striking, in proportion to their wide dispersion and change of climate and habit. Even the little Guinea pig (*Cobaya aperea*), which, in its wild state in South America, is of a dingy reddish gray colour, has by domestication varied much in size and form, and become of all colours; it being usually seen with large irregular

patches of white, red, yellow and black colours. The lamas of South America were domesticated by the native Indians before America was discovered by the Europeans; they may be designated as the camels of Peru. The original species still exist wild in their forests; there was, therefore, no possibility of their having received any admixture from foreign species. They are now of various sizes, and of all colours. Some of the domesticated races have become wild and returned to the mountains, like the horses on the steppes of Tartary and the prairies of America, and if we are only guided by external forms, we will find it very difficult to separate the true species from the varieties, and we perceive that Col. Hamilton Smith (*Synopsis, Griff. Cuv. p. 299,*) has divided them into no less than six original species. We can only make three species. The domesticated breeds are possessed of the dewlap so common in subjugated animals, which is wanting in the wild species.

15. The same disposition to branch out into varieties that exists in domesticated quadrupeds, is found also to obtain among the smaller birds. The common Barbary dove that has but recently been domesticated, and is reared in cages, is fast varying from its original pale fawn colour, with a ring around its neck; there is now a permanent breed that is pure white, and we have seen others nearly black. The little Canary bird is advertised for sale by bird fanciers, under twenty-nine distinct varieties. Even the gold fish of China, (*Cyprinus auratus*), which has been naturalized in the small ponds of Europe and America, has greatly varied in size, form, and colour; we have seen some nearly a foot in length, whilst others, which we kept in glass globes for years, did not exceed four inches; some are white, and are called silver fish, and others are spotted with yellow, white, and black.

16. We would ask those who consider the races of men as composed of different species, why all the varieties of men are found to produce fertile new races, whilst we discover that when we associate two true species of other animals their products are hybrids, and are incapable of perpetuating a race? Why is it that they have been so much staggered and perplexed by this most important fact? Why was it that in order to escape from this annoying difficulty, they were for so many years engaged in vain and ineffectual endeavors to prove that the descendants of their two species of men, the white and the black, were hybrids? First they endeavored to show that they were sterile—then that they were only prolific with one or the other of the original species; and finally, that the hybrid race soon died out. When at last the supporters of their own doctrines pointed out to them races that had existed and multiplied for hundreds of years, and were now as healthy and fertile as any of the other races of men, why have they so suddenly shifted their sails on the other side, and would carry their sinking bark to a port of safety under the false colours of fertile hybrids in the lower races?

We will here, for the information of the agricultural community, record our experience in regard to any improvement that may be expected from hybrids, either in the vegetable or animal kingdom.

In the department of flowers, the wild species in all countries, in nearly all cases, not even excepting the roses, are single flowered. Cultivated plants occasionally afford seeds, which, on being sown, produce double flowers, monstrosities, in which the stamens and pistils have been converted into petals. Where all the pistils have been thus metamorphosed, the plant of course bears no seed, as is the case with the stock gilliflower, and many others. In this

case the peculiarity can only be perpetuated by procuring seeds from an adjoining single flowering plant that has been fertilized by its double flowering neighbor. The causes of the production of these changes are as yet a mystery to us. In rare instances these changes originate in particular localities in their native woods. There is a small spot of half an acre, about twenty-five miles from Charleston, where the *Azalea nudiflora* has produced double flowering plants, and another at the head waters of the Edisto River, where a similar phenomenon is seen in the scarlet azalea, (*A. calendulacea*). In plants where a few stamens and pistils remain perfect, as in the carnation, China-aster and all semi-double flowers, fertile seeds are sparingly produced. In the double Camelias, silver leaved box, and other singular varieties, they as well as the best fruits can only be perpetuated by artificial means. None of these, however, are hybrids, and are not indebted to any other species for their peculiarities. The cereal grains, such as wheat, oats, rice, maize, millet, etc., have produced innumerable varieties. We observed at Edinburgh one hundred and six varieties of wheat, for sale in one seed store. The same may be said of our invaluable product, the rice. We observed varieties that originated in China, some of which appeared to be of superior kinds, that have never, that we are aware, been cultivated in America. In all these cases the varieties have originated each within its own species—there were in reality no other species from which they could borrow these peculiarities. Our Indian corn belongs to a peculiar family, (*Monoecia*), the silk on the ear conveys the fertilizing properties of the pollen to each individual grain—hence widely different varieties of maize may be found on each ear. It will from hence be perceived with what facility varieties are produ-

ced, and how readily they may be perpetuated. It is only necessary to plant the seeds of the several varieties together, and then select from the product such seeds as we may consider most productive. This will be found advantageous in another important particular, inasmuch as particular varieties are best suited to certain soils and climates. The highland variety of rice has been produced in this manner, as well as the large and superior rice of Colonel Ward : should any defect be found in any of these varieties, it may be easily remedied by sowing these seeds with other rice and making such selections as we need. In this manner we possess the same facilities as do the breeders of cattle, in the improvement of their stocks. In the Irish potato, of which we perceive Lawson and Sons, of Edinburgh, advertize one hundred and forty-six varieties for sale, the varieties are produced by sowing the seeds of many kinds that have been growing near each other, and selecting from the product the bulbs most desired. So also in regard to all other vegetables. These varieties, however, have originated each within its own species, and the greater the number of existing varieties, so much the more easily are additional varieties produced. In our cotton plant the same phenomenon is constantly exhibited. An admixture of several varieties in the same field will produce a new and often an improved plant. This may produce but one pod, or even only a single seed in a pod bearing superior cotton ;—from this the selection must be made. We perceive, however, in all these cases, the varieties are not indebted to any foreign species for their improvement. The potato does not owe its new variety to the ruta-baga or the turnip—nor does the cotton plant resort to the okra or any other kindred genus for the farina that is to contribute to its improvement.

In regard to all our domesticated poultry, we must not look to hybrids for an improvement in our breeds. The crosses between our various geese and ducks are good for the table; but for nothing else. Our friend, Dr. Desel, who has for many years been engaged in raising at his plantation the choicest varieties of all kinds of poultry, informs us that he raises the hybrids between the China and common goose for table use; occasionally preserving a female hybrid to sit on the eggs that are earliest laid by the common goose. The cross between the pheasant and common fowl has been erroneously supposed to produce the game fowl, this is, however, not the fact: the hybrid, which we have often seen, is a clumsy and useless bird—such is the case in regard to all crosses between different species of poultry—no varieties have in a single instance been produced that could be perpetuated.

Our domesticated animals are in like manner unable to produce varieties by admixture with other species. The value of the common mule is well known and appreciated, but it does not improve the breed of either of their progenitors, the horse or the ass. The buffalo may be easily domesticated; and should this be the case, many varieties would in time spring up within its own species, and these might become valuable either for their milk or for draught; but no improvement can ever take place from any hybrids produced between the buffalo and our common cattle. It will prove a useless labor and expense. So in regard to all other hybrids between the sheep and goat—the common hog and peccary, the horse and zebra, the dog and fox, etc. It was Pallas who first suggested the notion that the varieties of domesticated species might have had their origin from a commingling of two or more species—his views were without further examination, partially adopted by

Temminck, and then by Col. Smith ; but these suppositions have not been verified by a single fact that has ever come to our knowledge. We perceive, however, from hence, in what manner an error once published, is afterwards quoted by others, and becomes perpetuated, and how many evils result from a blind reliance on authorities, whilst we have much better authority before us in the book of nature. Without entering into details which would be improper in this place, we would merely observe that having dissected a considerable number of male hybrids, of several kinds, we were brought to the conviction that nature presented an insurmountable obstacle to this unnatural multiplication of species owing to defects in organization.

17. We will yet, in concluding this part of our subject endeavour to answer an objection on the one hand, and propose a difficulty on the other in regard to the insects of a disreputable name which inhabit the body of man not only externally but also internally ; we have heard it advanced as an objection to the doctrine of the unity of the human race, that these insects were of different species in the white and black races, hence as each species of animal was found to possess particular species of parasites, an evidence was presented in favor of the plurality.

The facts are too familiarly known to require much elucidation here, that all the genera of plants are severally resorted to by particular insects which are in many cases confined to a single species. Hence the caterpillars producing the moths, and other lepidoptera are so generally confined to particular species of plants, that the entomologist in looking for specimens has learned from experience what species of plants he must search, in order to find the larva of the particular insect he is desirous of obtaining. In the admirable, but ancient, rare, and expensive work of

Abbott and Smith, on the lepidoptera of Carolina and Georgia, nearly all the species are named after the genera of plants, from which the several caterpillars are known to derive their support. So rigidly do insects adhere to this law, that were the orange and fig trees and the cotton plant rooted out from the Southern States, the insects that now feed on them would unquestionably disappear from the country. The silk worm, (*Bombyx*), it is true, may be compelled on pain of starvation to feed on the leaves of our native mulberry, (*Morus rubra*), but it always gives the preference to its own legitimate species (*Morus alba*), of which the *Morus multicaulis* is only a variety. So in birds, each genus, and oftentimes each species, has its parasite that nestles on its feathers and proves a source of annoyance; but all the species are also infested with particular kinds of intestinal worms. The small annoying insects found in our poultry houses, differ from those in our pigeon houses. Nearly all our species of birds are annoyed by a small flat winged insect, (*Nermis*) moving about backward and sideways among the feathers like a crab; we have found a different species in each of two hawks, the fowl hawk (*Falco borealis*), and the sparrow hawk (*Falco sparverius*.) The bodies of different animals are infested with different species of *Æstri*, called the wolf. Thus we have on the horse, (*Æstrus equi*), on the cow, (*E. bovis*), on the sheep (*E. ovis*), on the rabbit, (*E. cuniculi*), etc., and on man, (*E. hominis*.) We have one species on the common rabbit, and another on the swamp rabbit. Another genus of insects (*Pediculus*), has one species on the horse, (*P. equi*), and one on the ass. (*P. asini*.)

It has been supposed by some that the intestinal worms have their origin in the countries where they severally infest animals and men; their history however, even among phy-

sicians, to whose studies it ought more legitimately to belong, is yet involved in much obscurity. We believe however, that with the single doubtful exception, that of one species of the tape worm, none of these species have ever been traced as existing in any other species of animal.

Let us now direct our attention to those troublesome intruders on the peace, comfort and health of man, in order to enable us to decide whether the facts as far as they have been ascertained are in favour of the plurality, or whether they may not be urged as a very strong argument in favour of the unity of the species.

There are as far as we can recollect, without referring to more recent authorities, about twenty-one species described as the foe of man, and as being found in different parts of his system,—with the majority of which we admit we are only acquainted from the loose descriptions of authors, and shall confine our remarks to seven species only, five of which we have from time to time examined and compared.

The *Æstrus hominis* is found in the tropical regions of South America, where it penetrates the skin of the natives and deposits its egg, which produces a larva that becomes very painful, and is said sometimes to endanger life. This dipterous insect we have never seen, but it was named by Linnæus, and its habits particularly described by Humboldt and Bonpland,* and the drawing of it which we noticed in the transactions of one of the foreign societies, which we cannot now refer to, was taken from one that had infested the body of a white man, and was extracted after his return to England. We are not aware that this species is found on any other animal in South America, but it will

* Essai sur la Geog. des plantes, p. 136.

be here perceived that it infests not only the natives but also our white race.

The Guinea worm, (*Gordius mediensis*,) we know only from description. It is represented as more especially troublesome in hot climates, but it is not confined to negroes only, it is found infesting the bodies of the inhabitants residing in the vicinity of the Red Sea; it is not uncommon in Poland, and was the disease of which the Emperor Henry V. is said to have died. This troublesome worm then exists both in the Caucasian and African races.

Seven species of tape worm have been described as existing in the human body, one species of which (*Tænia trutta*,) is said also to exist in the trout, the belief in which is a great tax on credulity itself. We have only examined one species, which we ascertained to be *T. vulgaris*; this came from a negro, we compared it with a specimen produced in the body of a white man—they were precisely the same.

The two species of intestinal worms, *Acaris lumbricis*, and *Acaris vermicularis*, we have found identical in the white and black races,—even in colour there was not a shade of difference.

Two species of *Pediculi* existing on the surface of the body we have examined and compared. We are aware that a species was described as existing on the African under the name of *P. nigritarum*; we have not recently seen the description, which we believe was given by Fabricius. We presume it is the same as is at present found among our negroes. It is darker in colour than that on white persons; this however is the only difference—we suspect the colouring matter under the human skin imparts this deeper shade to the insect. In the *mullato* its colour is intermediate. We have found the two species *P. huma-*

nis et P. pubis, the only ones we have had opportunities of comparing with the microscope, in the white race and in the negro, frequently exchanging residences, especially between nurses and children.

If we were in possession of any other information in reference to these pests, whether favourable or opposed to our theory, we would not withhold it.

We now submit, whether with our present knowledge on this subject any argument in favour of the plurality of species can be deduced from it. Do not these facts on the other hand afford another very strong evidence in favour of the unity of the species, since we know of no two species of animals that are in common infested by so many species of insects?

The opponents of the unity of the human race cannot, therefore, fail to perceive that the position they have assumed is surrounded with infinite difficulty; that in order to establish their views they must overturn all the principles which science has adopted for the designation of species; and that in departing from our ancient landmarks which have hitherto enabled us to decide with accuracy on the character of species, they would not only demolish the simple and beautiful temple reared by the labour of Linnæus, Cuvier and their coadjutors, but would scatter the very materials to the winds, and leave us with no other guides than those of uncertain conjecture. The new and obscure path in which they have invited us to tread, is opposed to our views of science. A vast majority of naturalists disclaim them as leaders, and will leave them to pursue their journey alone, whilst we are content to follow the safe and long-trodden paths.

The important fact must not be overlooked that our opponents are the assailants in this controversy. When

Voltaire first promulgated his crude and most unscientific notions on this subject, and attempted to show that not only the African, but the Albino also, were distinct species of men, his object confessedly was not so much to establish a truth in science as to invalidate the testimony and throw contempt on the christian Scriptures. It is but recently that the advocates of the theory of a plurality have denied the long received doctrine of the unity of the human race, as inconsistent with those principles which are received as the established laws of science. The onus probandi therefore rests with them. They have not been able to prove the truth of their position. We have no hesitation in saying that they are incapable of proving it. Until they shall have succeeded in this, the faith of men will remain unchanged.

We will now, in the conclusion of this chapter, sum up the evidence which we have produced in various parts of this Essay, or which are self-evident, and require no further proof in favour of the unity of the species.

1. There is but one true species in the genus homo.

In this he does not form an exception to the general law of nature. There are many of our genera which contain but a single species in the genus. Among American quadrupeds the musk ox, (*Ovibos moschutos*), the beaver, (*Castor fiber*), and the glutton or wolverine, (*Gulo luscus*), and among birds, the wild turkey, (*Meleagris gallipavo*), are familiar examples. The oscillated turkey, which was formerly regarded as a second species, has recently been discovered not to be a true turkey;—in addition to its different conformation, it makes its nest on trees, and lays only two eggs, possessing in this and other particulars the habits of the pigeon.

2. We have shown that all the varieties evidence a complete and minute correspondence in the number of

the teeth and in the 208 additional bones contained in the body.

3. That in the peculiarity in the shedding of the teeth, so different from all other animals, they all correspond.

That they are perfectly alike in the following particulars:

4. In all possessing the same erect stature.

5. In the articulation of the head with the spinal column.

6. In the possession of two hands.

7. In the absence of the intermaxillary bone.

8. In the teeth of equal length.

9. In a smooth skin of the body, and the head covered with hair.

10. In the number and arrangement of the muscles in every part of the body, the digestive and all the other organs.

11. In the organs of speech and the power of singing.

12. They all possess mental faculties, conscience, and entertain the hope of immortality. It is scarcely necessary to add that in these two last characteristics man is placed at such an immeasurable distance above the brute creation as to destroy every vestige of affinity to the monkey or any other genus or species.

13. They are all omnivorous and are capable of living on all kinds of food.

14. They are capable of inhabiting all climates.

15. They all possess a slower growth than any other animal, and are later in arriving at puberty.

16. A peculiarity in the physical constitution of the female, differing from all the other mammalians.

17. All the races have the same period of gestation, on an average produce the same number of young, and are subject to similar diseases.

If an objection is advanced against the rules by which we have been governed, and we are told that we have been blending specific and generic characters, we answer that in all the genera a species is selected and described as a type of the genus: hence there being but one species in the genus we have, in accordance with the rules by which naturalists are governed, selected the species as a type.

18. We have shown that man, as a domestic animal, is subject to the same changes which are effected in all domesticated animals; hence as species are taken in a different acceptation, in wild and domestic animals, our examinations of the varieties in men must be subjected to the same rules of examination. That these changes in men are constantly taking place, is evident, from the fact that great variations have occurred in several of the branches which we admit to be Caucasians, whilst wild animals with few exceptions have not undergone the slightest change. We have shown that from the many intermediate grades of form and color, in a being more subject to varieties than in any known species of animals, we can find no specific character so permanent as to warrant us in separating the varieties into distinct species. We insist on the right of applying the rules of classification to man as a domestic species. If our opponents urge the right of comparing him with wild animals, then they must first prove that men, like wild species are not subject to produce varieties. This is an experiment on which we think they will not venture. The human species cannot, therefore, be compared with wild animals that with few exceptions present a perfect uniformity. Place before you a hundred specimens of any wild species of quadruped or bird, with the few exceptions above alluded to, and there is scarcely a variation among any

of the specimens. The descriptions of Aristotle are as applicable now as they were in his day. On the other hand, look at the countenances even of our neighbours and the members of our own families, gathered together around the social circle, and you see the most striking differences in the color of the eyes, the hair, and the complexion, in size, in form, in length of nose, shape of the head, volume of the brain, etc. These peculiarities are so striking that we can every where recognize those whom we have previously seen. On the other hand, the countenances of the individuals even in domestic animals can seldom be distinguished from each other. The eccentric poet, Hogg, or as he was proud to call himself the Ettrick Shepherd, was able, as he stated, and no doubt correctly, to distinguish the individuals of the flock which he daily carried to the hills; but this talent even in distinguishing the countenances of domesticated animals, is possessed by few others; on the contrary the very child learns to distinguish individuals of the human race by their countenances; no two individuals even in the same family, can be found possessing the same set of features. Man must, therefore, be compared and examined by the same rules that govern us in an examination of domesticated animals. Let us compare him with any of these species. Take those about whose origin no difficulty exists; the horse for instance, the only true species in the genus, for naturalists have now classed all the others under the asses and zebras; or take the hog, whose origin is admitted by all naturalists; first examine the characteristics of *Sus scrofa*, then all the races which have sprung from it; apply the same rule first to the species and then to the varieties of men, and by these fair and legitimate rules of science, we are willing to enter into a comparison, and abide by the decision. The most eminent

naturalists of all past ages, have with a unanimity almost unsurpassed, already decided the question, and those who are now entering into the field, about whose qualifications, as judges, the world as yet knows nothing, and is therefore, unprepared to pronounce an opinion, are bound to give some satisfactory reasons for their dissent.

19. That the varieties in men are not greater than are known to exist among domestic animals.

20. That all the varieties of men produce with each other a fertile offspring which is perpetuated, by which new races have been formed ; and that this is not the case with any two species of animals.

21. That the insects which are found on the surface, and the vermes within the body, as far as they have been examined, are the same in all the varieties of men, and that where peculiar parasites infest men in particular countries they are equally found in all the races.

Until our opponents have proved that these propositions are not in accordance with the laws of science, or in violation of truth, we must regard their new theory as founded in error.

PART II.—CHAPTER I.

CAUSES OF THE VARIETIES OF THE HUMAN SPECIES AND OF THE INFERIOR ANIMALS.

Having in the first part of our essay offered, as we conceive, those evidences, which, according to the principles which govern naturalists in the designation of species, would include all the varieties in the human family under one species, we are now prepared as humble students of the laws of nature to unite with our opponents in our investigations in another department of physiology, which both parties in this discussion must admit to be full of difficulty. We will pursue our philosophical inquiries together in endeavouring to ascertain the causes which have produced those striking changes, which all admit, have taken place in all domesticated animals as well as in man himself. Whatever may be the conclusion at which we may arrive in regard to this part of the subject, they cannot affect our theory, or overthrow the facts we have already produced from the physical structure and moral characters of the races of men in evidence of the identity of species.

We are aware that objections have been advanced against the theory of the unity of the human race on a point which we regard as of a subordinate character in this discussion; we refer to those causes which have produced the varieties existing in men. We admit that here there are difficulties, but we contend that they are not one tithe as great as are those that present themselves against the theory of the diversity of the races. It becomes the province of the mind in the investigation of truth to grapple with difficulties; the laws established by an infinite mind

cannot be so easily interpreted by the imperfect judgment and the limited experience of men. A child may ask questions in an hour which a philosopher would be puzzled to answer in a year.

In examining this intricate subject we may, in investigating the changes that have been effected in the inferior animals, some of which are passing before our eyes, be led to conceive in what manner the same laws may have been at work in producing similar variations in form and colour in those superior races who afford evidences by their higher intelligence of having been created in the image of God.

The difficulties in tracing to their original sources the many hidden phenomena that have produced the varieties in the human species and in the races of domesticated animals, it must be admitted, are equally great with those who deny the unity, as with those that advocate it. Both parties are obliged to acknowledge that although they may form many reasonable conjectures, still in consequence of our imperfect knowledge of the laws of nature, we are not as yet warranted in speaking with certainty on this intricate subject.

It will be recollected that we are now to engage in an examination of races of animals and men who are living an artificial life, which we denominate a state of domestication, a word which is equally applicable to man as to the animals which he has brought under subjection.

Why it is that no sooner is a plant, a bird, a quadruped, or man himself removed to a different country and climate, and subjected to other modes of life, and fed on different kinds of food, these circumstances should so soon have an influence on the generative process, none of us are prepared to give a satisfactory answer. The parents undergo no change, the varieties are produced in their descendants,—

produced in these new situations and under new modes of life to which they were subjected. With the internal mechanism of those portions of the system where the germs of a new being are to be fashioned into life, with the capillaries that convey nourishment and form, with the mysterious process by which the form and colour, as well as often the temper and disposition of parents is sometimes transmitted to the offspring, and at other times produces a wide departure from the characteristics of either, the wisest physiologists are obliged to acknowledge their profound ignorance. We know however, that in the domestic condition these remarkable variations, have uniformly occurred in every species, man not excepted. But it is not necessary for either party to account for the process by which these changes are effected, (although we confess it would be gratifying to be enabled to do so,) since the facts themselves are self-evident. Physicians have thus far, found it impossible to account for the causes that produce the plague, yellow fever, and cholera, and in all their untiring investigations have scarcely advanced a step beyond the lights of Thucydides, Hippocrates and Sydenham, the earliest writers on the histories of these diseases. Similar to this is the admission made by both the parties in this discussion, that striking varieties in men and animals have been and are still produced, although these visible effects cannot as yet be traced back through all the intricacies of the process by which these changes have been effected.

Let us first direct our inquiries to those variations which have taken place in the forms and colours of men, and then apply the same rules to those domesticated animals which accompanied him in his extensive migrations.

What was the form and colour of the progenitors of our race, and where the birth place of man, have been the sub-

jects of much conjecture, and must be left to biblical critics, as they are matters which science cannot decide. Some have contended that the cradle of mankind existed in the central portions of Western Asia, and others, that he had his origin within the tropics, either of Asia or Africa. The most learned commentators have not been able to fix on the site which constituted the Eden referred to by the author of the Pentateuch. From the conformation of man, however, destitute of natural covering to shield him from the cold, we may draw the conclusion that he received his early existence in a climate so mild, that life could be supported and enjoyed without clothing.

If he had been created in a cold or even temperate climate, he would there have been subjected to so many artificial wants, that he must inevitably have perished the first winter of his life. He would have been obliged, during the summer, to provide the means of clothing—to lay up a store of food, and make provision for the severities of the coming season, the knowledge of which could only be acquired by time and gradual experience. Not so with animals, who are by nature furnished with instincts and with a covering of hair or feathers—with the means of migration, and with food suited to their wants. Hence we are warranted in believing, that man drew his first breath of life in a climate so mild, that existence could be supported and enjoyed without clothing, and that by his intelligence, he could in his progressive migrations, draw on the vegetable and animal kingdoms for the means of supplying himself with clothing as well as food, and adapting himself gradually to those changes in his circumstances which he was destined to undergo. Taking it for granted then, that man was created in a tropical climate, since every argument is in favour of this supposition, and not one that we

can think of, opposed to it,—the next question that suggests itself is, what was the form and colour of the first created parents of mankind? Some naturalists have supposed, that they were white—others, that they were of a dark colour, and again, others who regard the original race as having been black.

We believe we are warranted in saying, that the type of the original man has now disappeared from the earth, and no longer exists in any form of head, or in any lineament of countenance in any of the varieties of men; that migrations, the destruction of races by pestilential diseases, wars, the changes in climate, and admixture with neighbouring tribes, have affected both the forms and features of their descendents. The many skulls and figures of skulls, and casts we have seen of what are represented as ancient races, some of which are now lying before us, satisfy us that they are equally removed from the African, the Mongolian and Caucasian. Indeed, Dr. Morton, although he regards the Egyptian as a Caucasian, places him next to the lowest in the many families of that race, nor can we find any nation possessing such small heads and narrow foreheads. These peculiarities in ancient skulls convey to us an instructive lesson in regard to the changes which have occurred in the more modern races of men. From all the lights that have been afforded us, we are led to believe, that the European is, in form and colour, as much of an improved race, as the African is a degenerate one. If this should prove to be the fact—and we have analogy, history and reason in favour of the idea, and only vague and unsatisfactory conjectures in opposition to it—one of the objections so constantly advanced in regard to the antiquity of the African race, can no longer be produced as a legitimate argument. The African will then be found

to be as old if not an older race, than the European or any branch of the modern Caucasians. We do not assert that the white man has sprung from the negro, or the negro from the white man, but we have offered our reasons, 1st, why the original man, must, according to reason and nature, have had his origin in a warm climate, and 2nd, that mummies and ancient skulls indicate that the original type no longer exists, and 3rd, that the original race could not have been as light-coloured as are the Europeans, and their descendants of our day. How deep were the tints of his skin, or what the character of his hair, we have no means of ascertaining further than the fact, that all intertropical nations, where no extraordinary elevations interfere, are more or less dark-coloured.

If our opponents should here urge a theological difficulty, and remind us that the sacred record tells us that man was created perfect and in the image of God, we would reply that this perfection existed in the assimilation of man to his Creator in his moral nature and intellectual powers, and if they urge a Scriptural difficulty, they ought further to receive a Scriptural explanation, that man, although he might have possessed the beauty of an Apollo and the perfection of an angel, became fallen and degraded, and that it is in unison with the teachings of the Gospel, and the mission of Him who came to proclaim it, that he should rise from this state of degradation and be restored to the image of his Maker. It may be flattering to the pride and prejudice of our race to believe, that the branch of Noah's family from whom they descended, were the types of perfection. To us, however, it appears more in unison with the laws of nature to believe, that civilization and Christianity have mutually contributed to the improvement of man, in form and feature, mental endowments and moral elevation.

That there should have been an improvement in form, feature, and color in man, removed to a temperate and healthy climate, enjoying all the comforts of life, together with the cultivation of intellectual qualities, is consistent with that state of progression which is imprinted on all the works of the Creator; that man possessed of intellectual and moral powers, has made advances, can be easily seen when we compare the knowledge of the present day with that which existed a few centuries ago. It is useless to disguise the fact that the lands of our forefathers were once inhabited by rude barbarians, the Celts, the Goths, the Danes, the Normans and Saxons, and that we are their descendants. We can neither pride ourselves on the culture of their minds, or the perfection of their forms. That we should have made improvements in both, is consistent with a law of our organization, and the benevolent intentions of the Deity; and on the other hand, that a tropical climate, parched by a burning sun, in some parts laden with moisture, in others, affected by the sirocco from the desert, whose vegetation is in a great measure unknown to us—the miasma which rises from the earth we are unable to analyze—a land with whose geological structure and atmospheric phenomena we are as yet totally unacquainted—whose inhabitants have been for ages sunk in superstition and barbarism, should produce a degenerate race both in form and color, ought not to surprise us, inasmuch as we have seen great changes effected in some of the families of men, that are now ranked among the Caucasians. If the white European is an improvement on the original type, and the African gives evidence of degeneracy, and the predecessors of both were intermediate in form and color, and we have no grounds for a contrary belief, then the changes from the original forms will appear less striking.

Nor is this improvement or degeneracy from the original type inconsistent with what we see in the laws of the Creator, in the races of inferior animals and plants. In all our races of animals and birds, domestication under favourable circumstances of food, climate, etc., has produced an improvement on the original animals, the wild stock being still in existence. In all these races there have, from want of food, unfavorable climates, etc., been produced varieties that are inferior to the original species. How greatly the inferiority in the breeds of some of our horses to other varieties. In the hog there are some varieties greatly superior to the wild boar, and others far inferior. Some varieties of the dog, as the grayhound, the pointer, the beagle, and the Newfoundland dogs are superior breeds, and on the contrary the Pariah dogs of the East have their counterparts in many degenerate and worthless curs in our country, whose only recommendation is that they kill sheep, and annoy us by their never ending howlings at night. In plants the same law prevails. The wild pear, apple and plum, asparagus—cabbage and carrot cannot be compared with those improved varieties which have been subjected to the culture of man. God was, however, the Creator of all these species. He gave them the germs of existence, and stamped on them the power of improvement on the original forms.

If we then yield to our opponents the point which they so pertinaciously insist on, in regard to the Caucasians, that they commenced their emigrations from Central Asia—they must also grant to us the right of insisting that these were not in the acceptation of the present day, a white race of men. They we presume were not black, or had the crisped hair of the negro, neither could they have had the features of the present white races, for there is no proof in support

of either supposition ; but we have many strong evidences in favor of their having been an intermediate race.

We will then suppose, with our opponents, that man from some cause commenced his migrations from the high mountains of Western Asia. The Mosaic account and the traditions of all nations, civilized and savage, inform us that he was left there after the subsidence of a mighty flood ; and our opponents advance the improbable idea that he originated there. We have given our reasons why that could not have been his birth place, and that he therefore was a stranger to the home of his ancestors. We will suppose him, however, to have migrated from this point in several lines of wide and increasing divergence—one toward the South-east—one to the South-west—one to the North-east, and another to the West. At every step we proceed through changes of climate—varieties are found gradually differing in color, in form, and in language. In travelling toward Eastern Asia, we pass through the Mongolians in the Chinese Empire, and to the North we advance through Asiatic Russia, and meet the Kohiaks, the Tungous, and the Laplanders, the Samoides of Siberia, and finally the Esquimaux, and the kindred tribes of North America. In passing down the line of coast on the South East through Japan, along the chain of Islands in the North Pacific, we find the Papuan of New Guinea, then the New Hollander, and finally, the most degraded of all the races, the inhabitants of Van Dieman's Land. If from our original starting point, we travel South toward Africa, we meet the Arab, on the Eastern coast, who is a Caucasian, who although not in skull, yet in form and color, is a step removed from the original type. Going down the Western shores of the Arabian Gulf, through Nubia, we meet the Abyssinian of the Gala tribe, who is almost black, whose long hairs begin

to crisp, which Dr. Ruppel designates as nearly woolly, (*beinahe wolliges*,) and who in his thick lips and countenance approaches the African. Within the tropics we find the black races of Azamia and Mozambique,—proceeding farther South of the Tropic of Capricorn, we find the Caffrarian, who still possesses the woolly hair and thick lips of the negro ; and finally, at the extreme point of the Cape of Good Hope, the Hottentot with thinner lips than his neighbors, the negroes, the Caffres, and the Mozambiques, with hair still curled, but less compactly crisped than that of the true negro.

Proceeding down the Western coast of Africa, we find the Berbers, who inhabit different parts of Algiers, Barbary, and Morocco, who although regarded as Caucasians, give evidence of a great decline from the original type, in the prolonged form of the head, in the pouting lip and dark, and in many instances nearly black, colour. After passing through Sahara, or the Great Desert, we meet tribe after tribe, which, by various gradations prepare us to meet in Soudon, Dahohey and Monoo with the extreme negro type ; proceeding along the same coast, which to a considerable extent is unexplored, we find to the South of the tropics the Bushman, who though a personification of ugliness has again receded considerably from the negro type. If we proceed to the North-west, we pass through the dark tribes of Arabia, Tripoli, and Morroco. On the coast we find the somewhat lighter but still swarthy Portuguese—passing through Spain, we find the complexion improving, and finally, in the central portions of Europe, we meet the white race with the most perfect developement of feature, if not of form.

We have presented this brief outline for the purpose of showing the extensive fields which we have to traverse in

discussing this difficult subject. We are aware that there is not a perfect uniformity in the distribution of those races, that we cannot separate them by lines of latitude, or longitude, that they sometimes, like the various races of wolves in America, run parallel with, and at other times pass each other by hundreds of miles ; and that the Mongolian family is found from the tropics to the poles. That the African type may be traced on each side of the equator through seventy degrees of latitude—that the Malay race is as widely scattered as either of the above—that the Caucasian has found a residence in all climates, and that many tribes have so intermixed and become blended, that it is now very difficult to separate them. We cannot, however, fail to perceive that in passing onward step by step, till we meet with the Mongolian, on the North-east, the African on the South, and the white man on the West, we have been carried from the centre to the extremes, from one tribe to another, so insensibly, that we have scarcely marked the difference of the links, in the great chain by which these extremes of the races were bound to each other.

The question now under discussion would be less startling to us, if we were not in the habit of drawing our comparisons from the two varieties most widely separated from each other. If we can, however, show a common origin of these the most extreme races, the intermediate varieties will present less difficulty.

Directing our attention to one of the types most frequently selected, the African, we must not be led astray by the idea that the negro with thick lips and crisped hair, sprung from the white race. We have no evidence that a white race, such as is now presented in the fair forms of Europe and America, then existed.

Africa, as we before stated, has two hundred and seven-

ty-six languages, or dialects ; and Asia and Europe have been supposed to contain one thousand five hundred and twenty-four. This enumeration we think extravagant ; but possess no means of disproving it. The varieties of men in all these regions, some of which are permanent, although less numerous, are nearly as striking as are their languages. The emigration of their progenitors, may, for aught we know, have been gradual—new types may have been successively formed, and national characteristics, etc., produced not so much by climate or causes which cannot be accounted for, changing the color as by a succession of varieties which modifications became organic, and were thus perpetuated. By these phenomena the forms and physiognomies became changed, and by admixture with other varieties, as they from time to time sprung up, were produced those constitutions best adapted to the several climates in which they were destined to live. If, however, as we have reason to believe, the original stock was not to our type, then the changes must have been less striking, and, moreover, equally great on the North of Europe, as in the tropics of Africa—in the white as in the black. The thick-lipped, crisped-haired, negro variety, although inhabiting comparatively but a small part of Africa, was almost exclusively the only one that in former years was brought to America, as he could be most easily obtained, and was best adapted to a state of servitude. We have, in this country, seldom possessed opportunities of examining the immense number of intermediate varieties, some approaching the Caucasian in the shape of the head, physiognomy and structure of the hair. One of this kind resided for many years in Charleston, and others of different tribes, we have from time to time examined elsewhere. Had all these forms and colors been presented to us for compari-

son, we might then be better able to judge of the changes which have been effected through successive generations of men in various climates and countries.

CHAPTER II.

OBSERVATIONS OF TRAVELLERS, NATURALISTS, AND PHYSIOLOGISTS,
ON THE GRADATIONS BETWEEN THE VARIETIES OF THE RACES.

In the history of the United States Exploring Expedition, by Captain Wilkes,* we have an interesting account of the examinations made by Mr. Hale, the physiologist of the expedition, and by the scientific gentlemen composing the party, of several races of Africans that they found at Rio Janeiro. The narrative is rendered more attractive and valuable in consequence of containing wood cuts of eleven heads, and of the representations of the tatooing practised by the different tribes. Captain Wilkes says, "of these negroes some have little of the distinctive negro character, and others more of it than any human beings we had seen." Although he divides the negroes brought from North and South Africa into only two distinct and very dissimilar classes, yet he mentions many striking varieties as originating from each race, differing widely in structure, countenance and intellectual powers. He informs us "the Mundgola have the usual negro features with somewhat of a Tartar expression." "The Benguela blacks are generally of good height, with features having less of the negro stamp than those of the Congo." The Mozambique "has the negro physiognomy and qualities in their full extent." "The Caffres, who are found as slaves, are generally slen-

* Vol. 1, p. 54 and 63.

der and well made, with faces partaking slightly of the Moorish cast. Their colour is a yellowish brown, between that of a mulatto and a true negro. The nose is not depressed, the lips are rather thick, the eyes large, black, and bright, and the hair woolly." Finally, speaking of the white race, in Rio, he says, "indeed, some of the deputies would not pass for white men elsewhere."

Dr. Lawrence, a writer of excellent authority, who held moreover the Professorship of Anatomy and Surgery in the Royal College of England, after a very full and careful investigation of this subject, gives us the following statement,—“In features as in colour the different races, (he here refers to all the races,) are connected to each other by the most gentle gradations; so that although any two extremes when contrasted, appear strikingly different, they are joined by numerous intermediate and very slightly different degrees; and no formation is exhibited so constantly in all the individuals of one race as not to admit of numerous exceptions.”*

“We see, indeed, an astonishing difference, when we place an ugly negro, (for there are such as well as ugly Europeans) against a specimen of the Grecian ideal model; but, when we trace the intermediate gradations, the striking diversity vanishes. ‘Of the negroes of both sexes,’ says Blumenbach, ‘whom I have attentively examined, in very considerable numbers, as well as in the portraits and profiles of others, and in the numerous negro crania, which I possess or have seen, there are not two completely resembling each other in their formation: they pass, by insensible gradations, into the forms of the other races, and approach to the other varieties even in their most pleasing modifications. A creole whom I saw at

* Lectures on Physiology and Zoology.

Yverdun, born of parents from Congo, and brought from St. Domingo by the Chevalier Treytorrens, had a countenance of which no part, not even the nose, and rather strongly marked lips, were very striking, much less displeasing; the same features with an European complexion would certainly have been generally agreeable.* ‘The testimony of Le Maire, in his journey to Senegal and Gambia, is to the same effect; and there are negresses, except in colour, as handsome as European women. Vaillant says of the Caffre women, that setting aside the prejudice which operates against their colour, many might be accounted handsome, even in an European country. The accurate Adanson confirms this statement, in his description of the Senegambians. ‘The women are equally well made with the men; their skin is of the finest texture and extremely soft; the eyes are black and large; the mouth and lips small; and all the features well proportioned. Several are perfectly beautiful; they have much vivacity, and an easy air which is very pleasing.’†

“The Jallofs, according to Mungo Park, have not the protuberant lip nor flat nose of the African countenance.‡ We have also the testimony of another traveller concerning this tribe to the same effect: according to Moore,|| they have handsome features, and neither broad noses nor thick lips. Pigafetta,§ states, that the Congo negroes have not the thick lip of the Nubians, and that, except in colour, they are very like the Portuguese. Dampier in his account of Natal, describes the natives as having curled hair, but a long face, well proportioned nose

* *Beyträge zur Naturgeschichte*; 1r. Th., S. 89.

† *Histoire Naturelle du Senegal*, p. 22.

‡ *Travels into the interior districts of Africa*, 8vo. edition, p. 23. The Foulahs also have pleasing features, p. 25.

|| *Zimmermann Geograph. Geschichte*, Vol. 1st, p. 99.

§ *Relazione del Reame di Congo*; Roma, p. 12.

and agreeable countenance. The six negro crania engraved in the two first decades of Blumenbach, exhibit very clearly this diversity of character in the African race ; and prove most unequivocally that the variety among individuals, is certainly not less, but greater, than the difference between some of them and many Europeans.”*

Baron Humboldt, one of the closest observers, and the most intelligent and scientific traveller that this or any other age has known, makes use of the following language in reference to this subject : †

“Whilst attention was exclusively directed to the extremes of colour and of form, the result of the first vivid impressions, derived from the senses, was a tendency to view these differences as characteristics, not of mere varieties, but of originally distinct species. The permanence of certain types, in the midst of the most opposite influences, especially of climate, appeared to favour this view, notwithstanding the shortness of the time to which the historical evidence applied ; but, in my opinion, more powerful reasons lend their weight to the other side of the question, and corroborate the unity of the human race. I refer to the many intermediate gradations of the tint of the skin, and the form of the skull, which have been made known to us by the rapid progress of geographical sciences in modern times : to the analogies derived from the history of varieties in animals, both domesticated and wild ; and to the positive observations collected respecting the limits of fecundity in hybrids. The greater part of the supposed contrasts to which so much weight was formerly assigned, have disappeared before the laborious investigations of Tiedeman, on the brain of negroes, and of Europeans, and the anatomical researches of Vrolik and Weber, on the

* *Decas Craniorum*, p. 22. *Decas Altera*, p. 13.

† *Coëmos*, vol. 1, p. 351.

form of the pelvis. When we take a general view of the dark-colored African nations, on which the work of Prichard has thrown so much light, and when we compare them with the natives of the Australian Islands, and with the Papuas and Alfourans, (*Harafores Endamenes*,) we see that a black tint of skin, woolly hair, and negro features, are by no means invariably associated. So long as the Western nations were acquainted with only a small part of the earth's surface, partial views almost necessarily prevailed; tropical heat, and a black colour of the skin, appeared inseparable. 'The Ethiopians,' said the ancient tragic poet, Theodectes, of Phaselis, 'by the near approach of the Sun-God in his course, have their bodies colored with a dark sooty lustre, and their hair curled and crisped by his parching rays.' The campaigns of Alexander, in which so many subjects connected with physical geography were originally brought into notice, occasioned the first discussion on the problematical influence of climate on nations and races. 'Families of plants and animals,' says one of the greatest anatomists of our age, Johannes Müller, in his comprehensive work, entitled *Physiologie des Menschen*, 'in the course of their distribution over the surface of the earth, undergo modifications within limits prescribed to genera and species, which modifications are afterwards perpetuated organically in their descendants, forming types of varieties of the same species. The present races of animals have been produced by a concurrence of causes and conditions, internal as well as external, which it is impossible to follow in detail; but the most striking varieties are found in those families which are susceptible of the widest geographical extension. The different races of mankind are forms or varieties of a single species; their unions are fruitful, and the descendants from them are so

likewise ; whereas, if the races were distinct species of a genus, the descendants of mixed breed would be unfruitful ; but whether the existing races of men are descended from one, or from several primitive men, is a question not determinable by experience.*

“ Mankind are therefore distributed in varieties, which we are often accustomed to designate by the somewhat vague appellation of ‘races.’ . . . By maintaining the unity of the human species, we at the same time repel the cheerless assumption of superior and inferior races of men. There are families of nations more readily susceptible of culture, more highly civilized, more ennobled by mental cultivation than others ; but not in themselves more noble. . . . Deeply rooted in man’s most inmost nature, as well as commanded by his highest tendencies, the full recognition of the bond of humanity, of the community of the whole human race, with the sentiments and sympathies which spring therefrom, becomes a leading principle in the history of man.”

Here then we have sketches by various distinguished travellers and naturalists, of the varieties of men that exist on the earth, and especially, of tribes, some of which approach the Moors, a branch of the Caucasian on the one side, and others that approach the Tartars, a branch of the Monguls on the other. Here, by comparing together different tribes of Africa, as the Foulas, Jaloffs, Mandingoes, Kaffers, and Hottentots, and carefully noting how in these gradational differences they approach to the Moors,

* Humboldt introduces the above as a quotation from Muller’s *Physiol. des Menschen*. Muller, whose work we have not an opportunity of referring to at present, but which we partially read in Germany, advocated not only the doctrine of the unity of the human race, but as far as we can recollect, their descent from one original source ; but stated that we possessed no data by which the latter could be proved. We have possessed the best opportunities of knowing, and being able to state, that Humboldt believes that all the races of men are of one blood.

New Hollanders, Arabians, Chinese, etc.,* we will discover by what insensible gradations neighboring races are blended with each other. Here, everywhere, we find, even where there have been no intermarriages, the intermediate links in the chain of nations, by which the tribes are connected.

Let us now suppose that we as naturalists were called upon to decide on two neighbouring varieties of Mongolians and Caucasians, or Caucasians and Africans, where these varieties most nearly approached each other in the two intermediate links in the great chain by which these extremes were united, would we venture to regard them as distinct species? Most assuredly not. We would as soon think of making the short-horned Durham and Ayrshire cows, the Berkshire and China pig, or the Northern and Kentucky horse, of separate species. Why, then, after declining to make species of the middle links, will they insist on doing so at the outer extremities of this chain. Although we are obliged to confess that we have not much faith in those lines of demarcation which naturalists have assigned to the several races of men, since there are scarcely two of them that agree, and since moreover, there would be more varieties that could not conveniently be forced into either race, than in the individuals that compose the races themselves; yet, we are willing for the present to adhere to their own divisions and subdivisions of these races. We believe that the advocates of a plurality of the races, generally admit that the Berbers of the Atlas, the Arab of Algeria, the feeble natives of British India, and the dark wandering vagabond Gypsies, all with slight and somewhat doubtful intermixture with the Monguls, belong to the Caucasian family. †Dr. Morton, groups under the

*Crania Americana, p. 5. †Lawrence, p. 79.

Caucasian race, the Caucasian, Germanic, Celtic, Arabian, Lybian, Nilotic and Indostanic families. They have in all ages found it very difficult to decide on the line of demarcation between these and bordering races, which have been regarded as connected with the Mongolian or African tribes.

CHAPTER III.

THE BIRTH PLACE OF THE PROGENITORS OF OUR RACE IS ALSO THE NATIVE COUNTRY FROM WHENCE OUR DOMESTICATED ANIMALS AND POULTRY HAVE BEEN DERIVED: ALSO THE NATIVE COUNTRY OF THE GRAINS AND VEGETABLE PRODUCTIONS WHICH THEY CARRIED WITH THEM IN THEIR MIGRATIONS.

If we now direct our attention to the various races of domesticated animals, we cannot fail to be struck with two facts that have an important bearing in this discussion:

1st, That central Asia between the 20th and 40th degree of North latitude, and the 90th and 110th East longitude, the country usually regarded as the land from which the progenitors of all the races of men first commenced their migrations, is also the native country of nearly all the grains, vegetables, fruits, and animals, which have been transported by man in his wide migrations, and have supplied him with the necessaries, comforts, and luxuries of life. It is the native country of rice, wheat, pulse, vegetables, fruits, and the vine now every where in common use. There also, nearly all the animals are found in a wild state which have been domesticated, and all but the camel have been carried with him over the whole habitable world. These animals are the ass, goat, sheep, and cow, camel, horse, pig, dog, cat, etc. Those that were subsequently domesticated were from other countries, and their

origin can be traced without difficulty. The peacock came from India at an early period ; it was an article of importation from that country into Palestine by ships, in the reign of Solomon. It was known to the Greeks and Romans, and was the bird of Juno. The Guinea fowl was derived at a later period from Africa. The ancient Egyptians did not possess the common fowl, nor does it occur on their monuments. It appears to have been first introduced by the Persians under Cambyses from India, five hundred and sixty years before the Christian era. It occurs in some of the early Greek coins. The reindeer was designed to supply the necessities of the Polar families.

The lama, the musk, or as it is improperly called the Muscovy duck, the turkey and curassoe, were domesticated in America, and from this country were received several kinds of grain, probably also the maize, as well as the potato, and other vegetables and fruits more recently introduced. There are in the gift of animals adapted to domestication, and to the wants and necessities of man evidences of design, of wisdom and benevolence in the Deity, that are calculated to produce in the human mind many serious reflections, awaken the sentiments of gratitude in his heart, and dispel the cold and cheerless doctrines of materialism and infidelity.

The animals given to man at the period when his migrations commenced, are all-sufficient to supply his multitudinous wants. If any one species had been omitted, he would have been subjected to great inconveniences ; if more had been added, they would only have served as luxuries. Of all these animals there was but one well determined species in each genus that has been found capable of domestication, and constitutionally adapted to migrate with man over the whole earth.

The Arabian camel was given to man to serve a particular purpose, and is not needed beyond certain prescribed limits, hence he is not constitutionally adapted to live in countries where his services are not essential. He is found from the foot of Caucasus, over Persia and Turkey, Arabia, Northern Africa and India. He was intended by a wise Creator to form a link by which nations separated by boundless wastes and sandy arid deserts should be connected, not only by commercial but all other communications. No inventions or discoveries of man have enabled him to find a substitute for an animal so strong, docile, and full of endurance. He possesses a peculiarity in one of his four stomachs, adapted by its size and membranous cells to contain large quantities of water found in no other animal, enabling him to carry with him water to supply his wants for many days. The bones and soles of the feet are peculiarly adapted to tread the sands of the desert. The cow is essential to man's necessities. The goat supplies the inhabitants of mountainous regions with milk where larger animals could not ascend or find pasturage. The fleece of the sheep affords a protection from the winter's cold to nearly all nations. The patient ass and the swift horse attest their several uses. The dog is the protector of his domicil and of his flocks; the cat rids him of his unceasing persecutors, the rat and the mouse, and the prolific swine, geese, ducks, fowls, and pigeons, are further evidences of man's necessities and God's bounties.

2. We find that those animals, birds, grains and vegetables which were at the earliest periods subjected to domestication or cultivation, have undergone changes in form and colour, which, although from their differences of conformation, are not always similar in their operations,

have varied as widely from their original forms as have the varieties of men. As their organic structure, however, was different from the corresponding portions in man, hence changes of climate would produce different phenomena on different species.

Still in all the species these phenomena have in various ways been exhibited. The cattle on the mountains of Hungary, Bohemia, Switzerland, Wales and Scotland, have assumed different forms and colours from those in the vallies; on the mountains they are generally black, in the vallies, brown, and those on the marshy downs white, or spotted and of large size. In four widely separated localities, Greece, Hungary, Bavaria and Missouri, where the hog with a solid hoof has sprung up, it appears to have multiplied most, and the other races gradually diminished. The wild hog, from the forests of Germany, when domesticated in England, produced the immense breeds of Suffolk, Hampshire, Essex and Berkshire hogs; when the same animal was domesticated in China and the East Indies, it produced a small black breed, and in Africa a variety with legs so short that its belly trails on the ground. The sheep and goats on the mountains have assumed different forms, and are covered with a different fleece, and armed with different horns from those in less elevated situations. The wild wolf has varied in colour and size with every change of latitude. The dog has produced infinitely more striking varieties than have been exhibited in the varieties of the human race. The northern gray and black squirrel is of one species; (*S. Migatorius*,) some specimens are however uniformly gray, whilst others are pure black. Along the seaboard there are about nine gray to one of the black variety; as we proceed westwardly the gray colour begins to disappear; when we advance to Niagara and

Upper Canada, nearly all the individuals we saw, were black. The fox squirrel, (*Sc. capistratus*), of Carolina, with characteristic white nose and ears, has on our seaboard about two-thirds of its number gray and a third black; as we progress westwardly towards Alabama, through Georgia, we begin to find many specimens reddish yellow, and as we enter Florida we find nearly all of them black. The common skunk, (*Mephitis chinga*), the most variable of all our American animals, is in some portions of our country black, with a narrow longitudinal white stripe on the forehead and back, whilst in other parts it is nearly white, with a small portion of black. If we considered it necessary in support of our argument we might pursue this comparison through all the races of domesticated animals and birds. We presume however that to all close observers these facts are sufficiently evident.

CHAPTER IV.

HOW FAR COLD AND HEAT INFLUENCE COLOUR IN ANIMALS.—
DIFFICULTIES IN THE THEORY OF PLINY, BLUMENBACH AND
SMITH.—CONJECTURES ON THE PROBABLE CAUSES OF THESE
PHENOMENA.

The question now recurs, what are the causes that have been operating in producing such striking varieties both in the human race and in domesticated animals and even in a few wild species?

It must be admitted that cold as well as hot climates have a great effect on the colours of a number of well known animals and birds. In the Polar regions the resident species are nearly all white, especially in winter.

The white bear, the wolf and the Polar hare, (*Lepus glacialis*), are permanently so; the Arctic fox, the ermine and the northern hare, (*L. Americanus*), are white only in winter; the rein deer becomes nearly white; the wolverine, (*Gulo luscus*), and the musk ox, (*Ovibos moschatus*), seem however not to be governed by those laws, and undergo no change. The red fox of our country as well as the closely allied species of Europe, have produced varieties in the North of both continents that are black. Hamilton Smith asserts that in the table land of Pamarc, in Asia, 17,000 feet above the level of the sea "the wild and domesticated horses, and nearly all the mammiferæ are clothed in long shaggy white furs." Among birds all the ptarmigans, the gulls and the snow-finch, (*Plectrophanus nivalis*), become white in the Polar regions in winter; on the other hand although it has been asserted that the raven also becomes white in those high northern latitudes, we are inclined to doubt it, from the fact that it is partially migratory and driven several degrees to the South by the cold, and we observed that in Lower Canada it had undergone no change in winter.

When these animals or birds take up their residence farther South, their hairs are shorter and their feathers less dense. The white color is less conspicuous, and in some instances no change from brown to white takes place in winter. Such is especially the case with the ermine, which in South Carolina and Georgia remains permanently brown, and the Polar hare only becomes brown in summer south of Hudson's Bay. It appears, therefore, that whilst there is a tendency in cold climates to produce white colours in the covering of animals and birds, in a great majority of species, there are nevertheless some in which these changes do not occur.

How far temperature influences the colour in the human skin, is a subject which, as it is not essential to our argument, we need not discuss here. We cannot however deny that as a general law, the inhabitants living within the tropics, where altitude does not affect the temperature, are darker than those of temperate climates, although toward the Polar regions they are not similarly affected by those laws which change the hair of animals, and plumage of birds to a white colour.

Whilst we are willing to allow some weight to the arguments advanced by President Smith, who endeavours to account for the varieties in man, from the combined influences of three causes—"climate, the state of society and manner of living," we are free to admit that it is impossible to account for the varieties in the human family from the causes which he has assigned.

And here we must be allowed to remark that the advocates of the plurality in the races have not done our cause justice in regarding the arguments of Dr. Caldwell as advanced for the purpose of supporting their theory and in opposition to the doctrine of the unity of the human race.

Dr. Nott, in his recent lectures, quotes Caldwell as having abandoned the doctrine of the unity of the human races which he regards as "fairly settled in the negative as far as science is concerned."* Dr. Smith, whose work we have not seen for nearly forty years, but with whose views even in our boyhood we could not fully coincide, had assigned the above as the causes which produced the varieties in the human race. Dr. Caldwell's five papers were intended to prove, not the diversity of the races, but the insufficiency of the reasons assigned by Smith in support

*Nott's Lectures, p. 58.

of his theory. He records his conclusions in the following language:—"We wish it to be distinctly understood, that the discussion here contemplated is not intended to have the slightest reference to the original identity of the human race. That is a point of doctrine which we do not pretend to question, much less to deny."* And again he says:—"On the correctness of the Mosaic account of the creation of man, we place the most full and implicit reliance. We receive the Scriptures entire as the oracles of divine truth, and have neither the arrogance or the impiety to question a fact which they clearly set forth; nor have we ever presumed to make our feebleness of intellect the standard of their immaculate verity. In these declarations we hope we are understood."† We are willing so to understand him, and hope, at the same time, our opponents will do the same, and not quote the arguments of Dr. Caldwell, in opposition to the supposed errors in the theory of Smith, as demolishing the doctrine in the unity of the races, in which Caldwell himself professes to believe—of countenancing the doctrine of a plurality in the races, to which he is opposed—or invalidating the Mosaic account, in which he places "the most full and implicit reliance."

According to Caldwell, the reasons which Smith assigned for the varieties in men were unsatisfactory, but the doctrine he admits was nevertheless true. They are also not satisfactory to us; but we have yet to learn that a defective mode of defending truth is an evidence of its falsity.

The views, however, which we entertain in respect to the causes which influence either the forms or colours in animals and men are not founded on the influence of climate alone, or on the causes assigned either by Pliny, Buffon, Smith, or Blumenbach. Pliny says:—"Atheopas

* Portfolio, Philadelphia, 1814 p. 8. †P. 143.

vicini siderii vapore torreri, adustisque similes gigni, barba et capillo vibrato, non est dubium.”* Buffon says:—“The heat of the climate is the chief cause of blackness among the human species†” Smith and Blumenbach‡ have expressed views somewhat similar. Time and further investigations have enabled men to arrive at more accurate conclusions on this subject. Dr. Prichard has, as we have been informed, ably refuted these arguments of his predecessors. Our explanation of this phenomenon is grounded on the constitutional adaptation or predisposition to produce varieties which are developed in particular situations and under peculiar circumstances. We agree in the results, but we differ in the causes which produce these effects. Their theory is, as we have seen, founded principally on the influence of climate, gradually changing the colour, form and hair. Cold and temperate climates they suppose have a tendency to produce the white colour on the skin and straight hair, and warm climates to cause a black colour with crisped hair. Ours rests on an adaptation in the human constitution to produce a succession of strikingly marked varieties, in those countries where such a peculiarity in constitution is suited to the regions it is required to inhabit,—in other words, different climates require different constitutions, and a wise Creator has implanted in the organization of man an adaptation to produce such modifications as are essential to the health, comfort, and future increase of his posterity.

What are the causes in nature to produce first a peculiarity in climate, and then an adaptation of the constitution suited to that climate, are subjects, which, owing to our

* Hist. Nat., Lib. ii., p. 80.

† Nat. Hist. by Wood, p. 443, 449.

‡ De Gen. Hum. var. Nat., p. 124.

imperfect knowledge of the laws of the Creator, the wisest philosophers are unable fully to explain. The production of these varieties may be the effects either of altitudes or depressions in countries—of geological formations—of electrical phenomena—of peculiar atmospheres—of soils—of an approximation to, or a removal from the ocean—of particular kinds of food and manner of life, or of all these causes combined.

The effects, however, are before our eyes in every country—in every tribe of men, and in every race of domesticated animals; and could we be permitted to see more clearly into the hidden mysteries of nature, we would find no difficulty in accounting for the causes why, from time to time, offspring, differing widely from the parents, is produced in different regions of country. A tendency to produce such varieties exists in such countries, since we perceive that they spring up in various localities at the same time. This in a short period of time, often in the course of a few generations, becomes a native and preponderating variety. This variety is propagated by generation, in accordance with another law of nature, taught us by experience, that peculiar formations in animals and men become organic and are transmitted to their posterity. The traveller in Europe, in looking at the descendants of the Caucasian race, is struck with a peculiar cast of countenance in the inhabitants of the various kingdoms, possessing nearly the same latitudes and geological formations. Thus an Englishman, a Scotchman, an Irishman, a German, a Frenchman, or an Italian, may be recognized by the close observer without inquiring into their several places of nativity. We see and admit these striking characteristics, but we cannot tell why this is so.

The same mysterious process is going on in the lower

animals. What there was in climate or the constitution of the animal that first produced the short-legged otter sheep in New England, which has also recently originated in Great Britain from a flock of common sheep, no one can tell, but it has now become a permanent race. From the account given us in the Philosophical Transactions for 1813, by Col. Humphries, it appears that it is a small animal weighing about forty-five pounds, with loose articulations, crooked forelegs resembling those of the otter; naturalists have given it the name of *Ovis ancon*; so tenacious are its characteristics, that when united with the common breed, the product resembles either one or the other of the original variety.

How did the large dray-horse originate in Flanders from the common breed? We can only conjecture that several individuals of this variety appeared in that low country favourable to its production; these multiplied more rapidly than the original breeds, and finally gained the preponderance. The race, however, was formed and perpetuated. How has it happened that the deer in our swamps is long-legged, and that on the high land stouter and shorter-legged, and that in the hunting islands between Savannah and Charleston, it is not one half the size, and yet possesses large horns, and that in these several localities all the other varieties have disappeared? Here there was no human intervention, yet the effect was produced by unknown natural causes. Why is it that the cattle in Opelousas, in Western Louisiana, have without a change of stock within the last thirty years produced a variety of immense size, with a peculiar form and enormous horns, like the cattle of Abyssinia? They, however, have now formed a permanent race, and we were recently informed that all the other breeds had disappeared from the marshy

meadows of the Opelousas. We confess we were more struck with the appearance of this gigantic race of cattle than with any other that were ever submitted to our examination.

Let us now apply this established law to the human race. There is in the structure of man a constitutional predisposition to produce varieties in certain regions of country.

We were recently informed by our old and long tried friend, the Hon. Joel R. Poinsett, that a race of spotted men existed in Mexico. He kindly gave us the following note:—"Saw in the Capital of Mexico a regiment to the number of six hundred men, called Los pintados, who were all spotted with blue spots in some parts of the body. These people are found along the Pacific coast just North of Acapulco. This regiment was commanded by Gen. Alvarez."* These persons were all in fine health, and propagated these varieties from generation to generation. What there was in the food, the climate, or the geological structure of the Western coast of America to produce this strangely coloured variety in the human species we are unable even to conjecture. It was certainly not disease, as Mr. Poinsett represents them as a regiment of fine healthy-looking men, in which there was not a solitary individual who was not spotted in this manner. If our opponents who are busily engaged in making new species of men, should, on this hint, begin to speculate on the position this new species of *Homo maculatus* should occupy in our nomenclature, we would just remind them that they have originated since the discovery of America, inasmuch as they are a mixture of Spanish and Indian blood.

*See also DeBow's Com. Review, two papers by Mr. Poinsett.

CHAPTER V.

HOW FAR EXCRESCENCES AND MALFORMATIONS MAY BE TRANSMITTED BY GENERATION.

It is moreover a well established fact that not only varieties but even excrescences and malformations may be transmitted—numerous examples in every department of nature might be produced if our space would permit. We will only refer to a few races:—the races of short-tailed dogs among various breeds of this species, are sufficiently familiar to our readers; a breed of tailless cats has sprung up and become perpetuated in the Isle of Man; there are also breeds of pigs and of sheep with short tails; hogs with undivided toes, we have already referred to—they were first mentioned by Aristotle, and have since made their appearance among various breeds in several widely separated countries. In the proceedings of the Zoological Society for 1833,* p. 16, is recorded an account of a race of pigs with only two legs, the hinder extremities being entirely wanting. The communication with drawings of two individuals was made by Col. Hallam, who states “that these animals were observed at a town on the coast of the Tangore country, in the year 1795; they were from a father and mother of a similar make, and the pigs bred from them were the same.” Thus then accidental malformations, either by excess or deficiency may become transmissible and so perpetuate themselves. A breed of beautiful silvery fowls was but recently produced by Sir T.

* See also Farmer's Library, Vol 2d, p. 433.

Sebright,* in which the drooping feathers of the cock's tail have disappeared ; they go under the name of bantam hen cocks. In the top knotted varieties of fowls an osteological difference is produced in the cranium ; the rumpless fowls we have already alluded to ; all these breeds perpetuate their several peculiarities. We think it highly probable that when farther investigations shall have taken place, the blind fish, (*Amblyopsis spelæus*,) and the blind cray fish, (*Astacus pellucidus*,) existing in the caves of Kentucky, will be found to have descended from species that were not originally blind, but whose sight gradually became extinguished, in the darkness of the cavern, from want of use. In the blind fish which are in our possession, and for which we are indebted to our friend Professor Diekson, now of the University of New-York, the eyes have disappeared, but there exists a large cavity for the reception of the globe of the eye ; rudiments of the muscles, if not of the optic nerve,—this latter presenting two small roots proceeding from the central portion of the base of the brain,—are also found in these sockets. Could a wise Creator have originally placed all these appendages to the organ of vision without intending them for some use ? The blind cray fish from the same dark cave, and which was also furnished us through the kindness of the above named distinguished physician and scholar, appears to possess the same characteristics ; the extremities of the peduncles on which the eyes are placed in this class of the crustacæ are wanting, but the peduncles remain to attest the uses for which they were originally designed. When these singular species shall have been compared with those existing in the vicinity of the cave much interesting matter will be furnished us in regard to the effects which peculiar

* Penny Cyclopaedia.

locations, absence of light, chemical formations, waters saturated with lime and other ingredients, are calculated to produce on the forms of animals.

The case of the porcupine men is so well known that we need only briefly to refer to it here. An individual was born in England with a considerable portion of his body covered with excrescences resembling the quills of a hedge hog: these quills were shed annually like the feathers in a bird.* His six children were born with the same peculiarity; generation after generation succeeded, still although there were no intermarriages among these families, descendants possessing these excrescences constantly succeeded each other. If the individuals of these families had been exiled to some distant island where no other inhabitants had existed, they would probably have perpetuated a peculiar race, and succeeding investigators would with some show of reason, have regarded them as a new species. The transmission of natural peculiarities by generation is farther illustrated by the many examples on record of six fingered and six toed persons, whose descendants exhibited the same phenomena.† There is an evidence of this power of transmission in one of the families in South Carolina, moving in the highest circles, and justly esteemed on account of their high intellect and worth. The grandmother was born without teeth, but instead of which, the alveola rose above the gums, furnishing a substitute for the teeth, of remarkable firmness, sufficient for the mastication of any kind of food. Her husband had teeth; they had three children that arrived at maturity, all of them were destitute of teeth, and in this particular partook of the peculiarity in the mother; of the third gene-

* Phil. Trans., Vol. 9, p. 211.

† Haller, de monstis, Lib. 1, Cap. 6.

ration, there is at least one with this peculiarity—we have not obtained any information in regard to the remaining descendants.

We have merely selected these cases to show the mysterious and inexplicable tendency in the animal and human constitutions to transmit peculiarities to their descendants. Where these are malformations it may be doubted whether if even their numbers should for a time increase, they would multiply faster than the existing races and in time take the precedence. On the contrary we are led to believe that the race would finally yield to others, whose structures were more in accordance with nature. But the many varieties of animals and men are not malformations; they are equally healthy, fruitful and long-lived with those of the original species; their constitutions are adapted to the climates in which they reside, and the negro constitution in Africa is as perfectly healthy as is that of the native of Montpellier in his own birth place.

We had often heard of the tall regiment composing the body guard of old Frederick, of Prussia. They had been selected by a whim of that monarch, from among the tallest individuals found in his dominions. In a recent visit to Potsdam, we mingled among the descendants of these people, and almost fancied ourselves among a nation of giants.

We are then warranted in believing that varieties in men, as well as in those of inferior animals, have originated in various parts of the world, some of which have sprung up within the period of authentic history. These have transmitted their several peculiarities. In the course of time they became permanent varieties. They multiplied more rapidly than the original inhabitants, and finally, whole regions of country became populated by these new races.

CHAPTER VI.

ALBINO VARIETIES IN THE INFERIOR ANIMALS, AND IN THE HUMAN SPECIES.

In investigating the operations of nature, in the department we are now considering, we should not omit to notice the singular and remarkable fact of Albinos which have sprung up in many races of animals and birds. In these species the eyes are usually red, and the colour of the skin and hair pure white. The original of our domesticated rabbit, (*Lepus cuniculus*,) exists in its wild state in the warrens of England, and on the continent; the colour is, on the upper surface, uniformly gray, and no varieties exist in their native warrens; yet by transportation and domestication it has presented itself in various forms, colors, and peculiarities in fur. Finally, it produced an Albino race which has for a century been propagated in our country. We have observed this variety kept separate from others, and in the period of twenty years where there must have been a hundred generations in that prolific breed, not one of a different color was produced, nor did they exhibit the slightest tendency to disease. The same may be said of the Albino Ferret, of England and France. The white mice and Albino rats afford other familiar instances. These Albino varieties sometimes originate in wild animals. A family of white raccoons, (*Procyon lotor*,) has existed in Christ Church Parish, near Charleston, for many years, from which neighborhood specimens have been occasionally sent to us. We observed that about half of them had the pink eyes of the Albino. Gray, of London,*

*Mag. Nat. His. vol. 1, 1837.

has described a raccoon from Texas, under the name of *Procyon nivea*, which we have ascertained, by an examination of the original specimen, to be of this white variety. We have seen several families of the Carolina gray squirrel that were Albinos. We have not a doubt that could the Albinos of various species of animals be prevented from mixing with the common varieties, they would perpetuate their breeds possessing this peculiarity. We have seen a specimen of a white elephant, from Siam, but as this species does not multiply in a state of confinement, we can as yet know nothing of the extent of its fertility.

D'Azara, in his history of the quadrupeds of Paraguay gives us very interesting accounts interspersed throughout his two volumes of numerous examples of Albinos among the animals, as well as Indians and negroes, in South America; the mere index (Tome II. p. 415,) of references nearly fills a page.

In the human family, Albinos occur in all the varieties, but appear to be more common among the dark coloured races than in the whites. Of the latter there is an individual who was born, and is now residing in Charleston. Of the former we have seen a number of examples. We are informed that in St. Domingo, Guadaloupe, and Martinico, the negroes of African origin produce one out of six or seven children of this Albino variety. How far this statement which we have seen published, from time to time, is correct, we possess no means of ascertaining.

It is further stated that in some instances they have blue eyes and ruddy skins, the epidermis being perfectly healthy. Although we have seen no examples of the above description among Albino negroes, we were permitted to examine a similar case originating from the Caucasian variety at Ludwigstadt, in Denmark. Her hair was white, soft and

almost downy, her eyes blue, giving no evidences of the usual aversion to light found in those with rose colored eyes—her complexion was very fair, and her cheeks ruddy.

Wafer is quoted by Dr. Morton* to prove that Albinos are not unfrequent among the American Indians. Their eyebrows are milk white, as is likewise the hair of their heads which is very fine, inclining to curl; “they have weak eyes, and are obliged to avoid the glare of the sun, but see well by moonlight.” In the work of Dr. Lawrence† there is an interesting account of that singular description of “human beings called Albinos, possessing a skin of peculiar reddish or unnatural white tint, with a corresponding yellowish white, or milk white hair, and red, or at least very light blue or gray eyes.” The whole article, although too long to be copied in this place, is worthy of perusal. We will condense some portions which he has given more in detail.

Dr. Lawrence does not regard this peculiarity as exhibiting a single character of disease. All their functions are executed as in other persons. They are born of healthy parents, occur among the robust and hardy members of savage tribes, and a similar deviation takes place in many wild animals. Mr. Jefferson expressly mentions, that of the seven cases which he saw in American creole negroes, all the individuals were well formed, strong, and healthy.

Blumenbach enumerates sixteen examples of Albinos which he saw in Germany; and many instances have been noted in every kingdom of Europe. Among the Africans, Dr. Winterbottom mentions eleven instances as having occurred at Sierra Leone. Jefferson mentions seven, and Dr. Bowditch states that the King of Ashantee had collect-

*Crania Americana, p. 69.

†Lectures on Physiology, Zoology, and the Nat. History of Man, p. 244.

ed nearly a hundred white negroes. Dubois mentions that they are not uncommon in the East Indies among the Hindoos, and Cook met them in several Islands of the Pacific.

It was formerly supposed that they were incapable of propagation. This is an error. Jefferson mentions two instances where they bore children, one of whom had an Albino child by a black man. Winterbottom mentions other cases of fertility among Albinos. We have seen a number of cases of a similar kind. The Albino of the Caucasian variety in Charleston, is married, is a male, and is the parent of a son. Both sexes to our certain knowledge are therefore prolific. We know no instance of two of this variety having been matched together, and therefore are unacquainted with the extent of their fertility under such circumstances. We know, however, that in all the lower animals, Albinos mated with each other, produce Albinos that are perfectly healthy, and propagate as rapidly as any other varieties. Here then, our opponents might insist as Voltaire has already done, that the Albino was a new species of *Homo*, if they had not previously ascertained his origin.

Nor are we to conclude that because Albinos usually have red eyes, they invariably possess this peculiarity. In the human species this is not the fact in all cases, and among quadrupeds the exceptions to this rule are still more numerous. We have examined about a dozen specimens of Virginia deer, that were either altogether or nearly white, and have found but one possessing pink eyes. We have also observed that in the domesticated white rabbits, and other quadrupeds, as well as in many wild birds, the slightest dark spot on the quadruped or bird is followed by the usual natural color in the eyes. In a white rabbit, having a black spot on one of its ears, we discovered that

the eye on the same side was of the common color, and the opposite one pink. In our domesticated animals and birds, horses, cows, sheep, goats, pigs, turkeys, geese, ducks, fowls, and pigeons, that are of an uniformly white colour pink eyes are scarcely ever observed. In all these cases the term Albino must be applied in a different sense from the usual acceptance of the term.

We have brought to the notice of our readers these cases of Albinism for the purpose of showing the operations of nature in this department of physiology. In some cases children born with red eyes and white hair, in their progress to maturity gradually lose these peculiarities, and their eyes hair, and complexions assume more natural colors. If, as we here perceive, nature makes so wide a stride, as without a single intermediate step, black races of quadrupeds or birds, are converted by the process of nature into white races, and a black pair in the human race produces a white progeny, we may learn how many phenomena there are in nature which the knife of the anatomist cannot reach, and all the investigations in physiologoy are unable to fathom. Even admitting that the case cannot be reversed in regard to our species, and that the white pair never produces a black offspring, they will recollect that they have afforded us no evidence that our white race, in the present acceptance of the term, is of the color of the original man; that, therefore, as in conformity with the other operations of nature, a variety does not return to the characteristics of the original species, so we can have no well grounded belief that any change will convert the white into a colored man; on the other hand, if the original color was dark, whatever may have been the shade, this was the very color of the races in which, in all ages and countries, the greatest number of white varieties have been produced. In the production

of these Albinos, however, we perceive at least how suddenly nature carries one extreme to the other, and how many admonitions are offered us not to pronounce a hasty judgment, without being supported by such facts as will warrant us in arriving at a correct conclusion. The notions of Buffon that Albinos in the dark races only occurred within the tropics, are proved to be incorrect, since we have seen them in Carolina, Virginia, and New York, and in all the intermediate States; and the assertions of more recent authors that this peculiarity was a disease, and that the individuals were infertile, is equally erroneous. If our opponents can explain to us the *modus operandi* of Albinism and Melanism in man, and the other warm-blooded animals, they will very essentially aid us in our efforts in endeavoring to account for those mysterious changes which have occurred in every age in those new races which have sprung up with characteristics that were foreign to their predecessors.

CHAPTER VII.

THE SEAT OF COLOR IN THE LOWER ANIMALS, AND IN THE HUMAN SPECIES.

We admit the truth of the generally received doctrine that variations in form and structure are the results of the internal conformation of the bony system; we think however, that the seat of colour, and those peculiarities which are visible on the surface of the body, and form the characteristics in the varieties of animals, must be sought in the texture of the laminæ lying under the outer cuticle or scarf skin. Much difference of opinion has existed among physi-

ologists, and many interesting articles have been written in descriptions of those membranous parts (*Epidermis et cutis vera*) which contain the substance of color, and to which may be traced the origin of the hairs, feathers, scales, horns, nails, and other peculiarities in men, mammiferous animals and birds. The structure of these tegumentary organs appears to be of a very variable character, and produces changes which cannot be fully accounted for on any of the known principles of science.

We will notice a few instances. Many species of birds and quadrupeds are known to present themselves to us under two very distinct liveries in the course of the year. Our rice bird (*Icterus agripennis*), is yellowish olive in autumn and winter, and black and white in summer, differing so greatly in these semi-annual changes that the naturalist has infinite trouble in convincing the unpractised observer that that it is the same bird in different states of plumage. The Canada grouse (*Tetrao Canadensis*) is nearly black in summer and white in winter. We could enumerate upwards of fifty species of birds in America, in which great changes take place semi-annually, in summer and winter colors. The same is remarked in quadrupeds; the ermine, the variable, and Polar hare, it is well known, are brown in summer and white in winter. The peculiarities in those structures in the outer and inner parts of the skin, where the coloring matter is situated, and the process of nature in which these changes are produced, we endeavored to explain in an article which we published several years ago,* and can only refer to the subject in this place, without entering into any details. These semi-annual changes in color are not only confined to such species as have a con-

*Am. Phil. Trans., 1837, Bachman on the changes in the hair and feathers of quadrupeds and birds.

stitutional predisposition to such phenomena, but they spring up from causes which no one is able to explain, in species whose color is generally uniform. We received from a friend a wild turkey caught in a trap. At the moulting season, on the following summer the new feathers came out nearly white, but after some weeks gradually returned to the original color. Our friend, Dr. Campbell, of Charleston, directed our attention to a top-knotted hen, on his premises, which had been received from Baltimore, whose colour had been originally black, but which after the moulting season had become pure white, and continued so for a year, until the next moult, when it once more became black. Thus it continued for several years to alternate between these two opposite colors. All this while the bird remained in perfect health, and laid the usual number of eggs. Horses brought across the Atlantic are found to have white patches of hair on those portions where the skin had been rubbed off on the voyage. We perceive from hence, how easily the coloring matter under the skin becomes deranged, and from what slight causes it imparts an entirely opposite color.

In the human subject, the pigmentary tint in the white man is pale and almost colorless, and is less in winter than in summer. In the dark colored Caucasian it is amber colored, and in the negroes these granules are of various shades of black. Where the skin has been accidentally rubbed off in any of the varieties, it is replaced by an epidermis which for a long time retains the colour of that of the Albino. A friend of ours, in the enjoyment of perfect health and vigorous intellect has, from some unknown cause, exhibited spots on his face and hands, like the colors on the skin of the Albino, in increasing numbers for several years.

Here then in the organs where the colouring matter is so

liable to disappear by absorption—by disease—or causes not yet discovered ; there is ample room for philosophical investigations. It is to this intricate branch of the subject that the attention of our anatomists and physiologists should now be directed. We perceive indeed whilst we in America, without making any anatomical or physiological investigations that we are aware of, are endeavouring to demolish long established theories and building up new ones, with the heedless rapidity of children in a toy-shop,—the eminent Professors at Berlin, Gottingen and Heidelberg, are laboriously engaged in examining first causes—investigating the texture of those tegumentary organs in which all these variations immediately originate.

CHAPTER VIII.

INTELLECTUAL AND MORAL PREDISPOSITIONS IN MEN, AND HABITS AND INSTINCTS IN ANIMALS, THE RESULT OF DOMESTICATION, AND ACCLIMATISATION, ARE TRANSMISSIBLE.

Thus far we have attempted to show that animals and men are not only subject to great variations in form and colour, but that these become constitutional—are transmitted to their progeny, and finally produce permanent races. We will now present such facts as are calculated to prove that these variations and transmissions are not confined to the physiological changes, but that a state of domesticity evolves another phenomenon in what is usually termed the psychological character by which are designated habits, instincts, &c., in the lower animals, and intellectual and moral attributes in man.

A volume might be written on this subject, affording interesting subjects of philosophical inquiry ; we will, how-

ever, limit ourselves to the statement of only a few facts that have an important bearing on the mysterious and inexplicable property in the transmission of these qualities from parents to their descendants.

We obtained eggs from the nest of our common quail or partridge, (*Perdrix virginianus*,) which we placed under a bantam hen ;—the young when first hatched were so wild that for several weeks we were obliged to confine them in a box with the foster mother to whom they did not for two weeks become reconciled. In time, however, they became so gentle that they followed her until they were nearly full grown, and then attached themselves to us—came into our study, and often amused themselves by taking hold of the pen with which we were writing. On the following spring these now domesticated birds laid eggs—these were placed under the same bantam hen, together with similar eggs from wild birds. The young from the domesticated partridge were nearly as gentle as common chickens, and at once followed the foster parent, whilst those from the wild birds immediately darted off into the shrubbery and became dispersed and lost. The young of our domesticated turkey are so gentle that they feed from the hand immediately after they are hatched, whereas, the young from the eggs of the wild turkey, although hatched by a tame bird, are as we have often observed, so wild at birth that they instinctively run off and conceal themselves. It requires weeks of confinement in a pen to reconcile them to the tame turkey, and even with the most careful treatment nine out of ten are known to perish. The young turkeys produced from parents of the first domesticated pair are less wild, and we have observed that it is not until about the fourth generation that the young at birth are as gentle as those from the tame turkey. This peculiarity was ex-

hibited in many species of birds which we have from time to time subjected to the process of domestication. Each succeeding generation became more gentle than the previous one. We observed moreover that a taste for particular kinds of food is hereditary. The young of the tame turkey immediately peck at corn flour and other kinds of broken grains, whilst the young of the wild turkey for weeks refuse any other food except insects. In quadrupeds there is a considerable difference in the dispositions of the young of different species. The young of the common deer, the moose, the prong-horned antelope, and the buffaloe, become gentle in one or two days; on the other hand, the common wild cat, (*Lynx rufus*,) the cougar, (*Felis concolor*,) and several other species are always restive under restraint, and are tamed with great difficulty. We have, however, observed that the descendants of the latter in the third generation become almost as gentle as a cat—this is also the case with the lion and tiger. In these cases, and in a vast number that occur to us at this moment, we perceive in what manner domestication during successive generations produces an influence on the dispositions of the progeny. We will mention a few facts which have come under our immediate notice, although we are aware that we will scarcely escape the charge of credulity. A male pet lamb that had been brought up with the cows, was taught by the boys at the farm-house to butt with his horns, and for this acquired propensity he had subsequently to be confined. It was observed that his offspring became so pugnacious that the owner was finally obliged to change his stock of male sheep. Dogs that have acquired the vicious habit of killing sheep seem to transmit this propensity to their progeny, and we have known at least one instance where a whole race of

these dogs was exterminated from a neighborhood on account of this habit. The pointer and setter of good breeds stand at the game without being taught. The dog called the retriever has but recently been introduced, and is a cross between two other varieties. It was originally taught to fetch the game, which is its only occupation. We were in England and Germany shown several of these dogs that had on the first time after being carried into the fields brought the game without having been taught. The descendants of the shepherd's dogs are born with such an innate propensity to guard the sheep that they require scarcely any training; their predecessors, however, were subjected to a tedious process of training. The dogs in Belgium and France are accustomed to be harnessed, and draw small wagons, etc. We observed that young dogs of this breed possessed so strong a propensity to this kind of employment, that they often ran up to these small carriages, seized the traces and endeavoured to lend a helping mouth, to an operation that was inherently natural and pleasant to them. The cow in her natural state yields milk no longer than a few months until the calf is able to provide for itself. On the other hand, breeds of cows have been produced by weaning the calf and constant milking that yield milk for several years without an intermission.

If peculiarities in disposition, temper and instincts in the lower animals, are capable of being transmitted to their posterity, may we not from hence be led to form some conception of the manner in which peculiarities in the dispositions and characters of races of men may become perpetuated, and may we not also learn in what manner in a succession of generations an instinctive hereditary propensity may be directed in a different channel, and nations of hunters, or shepherds may in time become nations of

agriculturists. Our Indian tribes have been proverbial for a natural attachment to the chase, to a love of plunder and of war. It has been frequently remarked that their young men educated in civil life, have had such a strong natural propensity to the life of the forest, that in many instances they returned to this, their first love. We perceive Dr. Morton offers this as one of the evidences of essential distinctiveness of the race. We ought not however to forget that at certain periods in the histories of nations, every race has had its ages of barbarism. The tales of war, rapine and love of the chase, in relation to our own Caucasian family, should be an instructive lesson to us. The traveller along the beautiful banks of the Rhine from Schaffhausen at the falls, down to Cologne, and even onwards towards Holland, witnesses the most lovely scenes of industry, rural simplicity, and love of agricultural pursuits. Such are the characteristics of the present race of inhabitants, but he has only to turn his eyes upwards and he will have the monuments of the psychology of their forefathers staring him in the face. On every high and almost inaccessible peak of the surrounding mountains he sees in the ruined castles and dilapidated towers, the characteristics of their forefathers—these eagles' nests seated on the summits of the beetling rocks, give evidence of the manner in which the ancient Barons with their plundering serfs, watched the surrounding vallies and the river, for opportunities to pounce down and levy black mail on all who ventured to traverse the plains or navigate the Rhine. It was a nation of rude, cruel, and lawless warriors, of hunters and of robbers. Such also were France, England and Scotland, as history abundantly attests. That our American aborigines have rather degenerated than improved is admitted, yet the ruins of ancient temples, &c. give evidence that some

of the tribes regarded by Dr. Morton himself, as having belonged to the same race, were not only agricultural in their occupations, but had made considerable advances in civilization and architectural knowledge. The early Cherokees were a tribe of barbarians who lived by hunting and plunder. Generation after generation succeeded, their habits have been-undergoing a change, and now many of them have devoted themselves to husbandry—they are slowly becoming an agricultural people, and their characters have been much improved. We met at the foot of one of the mountains of the Alps, a chamois hunter, who in speaking of his hair-breadth escapes, and the perilous life of privation he chose to lead, offered as a reason that the passion was born with him, having descended through the blood of many generations. A good friend of ours has often related to us an anecdote of the son of an Indian chief whose education had been entrusted to him; after the indulgence of an occasional paroxysm of anger and revenge, he was in the habit of excusing himself by saying that “it was the Indian that was in him.” If these were hereditary propensities might we not hope, that as reason and conscience are given to all men, these dispositions might in time become modified, and then entirely eradicated, and a different train of propensities be transmitted to their posterity. In this way the pursuits and habits of nations have become changed, their aspirations have been directed into other channels, and finally all their ancient characteristics have disappeared, and they have been converted into new psychological races.

CHAPTER IX.

THE RACES OF MEN AND DOMESTICATED ANIMALS EXISTED TOGETHER FROM THE EARLIEST PERIOD ON RECORD.—THE HUMAN CONSTITUTION MAY HAVE BEEN MORE SUSCEPTIBLE TO PRODUCE VARIETIES IN THE EARLY PERIODS THAN AT PRESENT.—THE VARIETIES IN ANIMALS CONSIDERED.—HOW THEY AS WELL AS MEN HAVE UNDERGONE CHANGES IN DIFFERENT COUNTRIES.

There is another difficulty that presents itself in much stronger force to the theory of the believers in the diversity, than it does to those who advocate the unity, of the races.

The races of men we are told by our opponents have existed from very early times, as is testified by ancient mummies, and by the earliest records in profane history. There is however a still earlier record that we might on the same ground produce as historical evidence of at least equal importance. They must admit that there was a long interval of time from the creation of men and animals before we received one line in regard to the forms or colours of these various races. The period of authentic history even among the most enlightened nations is short, and beyond it all profane history is involved in fable and obscurity. Many of our domesticated animals existed in the earliest ages. We read in sacred history that Abel was a keeper of sheep, and man who was originally a shepherd, has always been attended by his flocks. The ass, the camel, the goat, the cow, the horse, the sheep, and the swine, were the earliest conquests of man. This is testified by every tradition and the united testimony of ancient writers. It is then on this blank leaf in ancient history that from the researches in more modern times, and the analogies we are permitted to draw, we are now enabled to record our views

in regard to the changes in men and animals which occurred in their first migrations to new and uncultivated regions.

The supposition is neither unreasonable or unscientific, that the constitutions of men were so organized that in those early times before the races had become permanent, they were more susceptible of producing varieties than at a later period after their constitutions had attained to the full measure of its developement, beyond which there would at every step be a greater difficulty either in advancing or returning.

Hence the several races would in a very short period of time have become established—we can set no bounds to the power and wisdom of the Creator. There are operations in nature which to the limited powers of man are full of mystery, we have however before us both the causes and effects—the power of God and the evidence of his works, but we are unable to trace all those links in the great chain which binds the creatures of earth to the throne of Omnipotence.

And here we may be permitted to make another observation in regard to the time that may be requisite to establish a new race in a country so as to give it the preponderance. We coincide in the views of Sir Charles Lyell* that when these varieties are once formed they multiply very rapidly, whilst on the other hand the existing varieties gradually diminish—the facts presented to the Zoological Society which we before stated of the variety of the Japan peacock springing up in several places at the same time among the common kind, and thus gaining the preponderance—the fact that our Guinea fowls in Carolina have within a quarter of a century, in one third of the life time

* Principles of Geology, Vol. 3d, p. 48.

of man, produced more varieties than those of the original stock,—that the small black cattle, and the black-faced sheep originated on the mountains of Great Britain, and cannot be made to thrive on the low rich bottoms; and on the other hand, that the Ayrshire, short and long-horned Durham among the larger breeds of cattle, and the large south down sheep are known to degenerate, and the races finally to disappear when removed to the mountains, will afford us additional aids in investigating the origin of the varieties in the races of men.

What there was, or now exists in the climate of inter-tropical Africa to give to the inhabitants in the different localities of those regions, such great diversity in the shape of the head, the expression of countenance and structure of hair is just as difficult for us to conceive, as for our opponents to explain why in the same country the hog has become black—the sheep has lost its wool and put on a covering of black hair, and the dog, as well as some breeds of pigs have become naked, or why it is that a variety of the common fowl, (*Gallus morio*), is not only black in colour, but has the comb, wattles and skin dark purple and the periosteum of the bones black? When these phenomena in the lower orders of animals shall have been fully accounted for by our opponents, they will have afforded us some lights by which we will be enabled to explain the causes of difference in human forms and complexions.

If we now direct our attention for a moment to another region, we mean Angora in Asiatic Turkey, we will find nature equally prolific in the production of strange forms among nearly all the animals existing in that region of country. Angora is situated in a temperate latitude $39^{\circ} 30'$. The vale of Cashmere 50 miles in length, although surrounded by high mountains, is according to Jaquemont

only 5,346 feet above the level of the sea ; it is regarded by the inhabitants as the paradise of the world, where spring reigns perpetually : it produces the grape, rice, and the fruits of warm climates. We are unable to discover anything in the soil or in its geological structure—in altitude, in food, or in climate, that would have any effect in changing the forms of animals. Yet here nature seems to be constantly at work to astonish, perplex and throw into inextricable confusion all the theories and speculations of naturalists. There nearly all the animals whether existing on the mountains or in the vallies have become white ; their fur is long and silky ; their ears are broad and long and in every instance drooping, and in some cases trailing on the ground. It is there that the Angora, or as it is sometimes called the Cashmere goat, presents its long silky hair ; its drooping ears and milk white colours ; when compared with the common goat, the observer not closely versed in natural history, would declare it to be a different species. The hair of the common goat is of no value, and yet from this Eastern variety are produced the finest stuffs, particularly camlets. The exports of this invaluable material to Holland, France and England, are about 1600 camel loads annually. There is the Angora rabbit, a descendant of the common English species, with ears twice the length, pendant and reaching the ground, and with a downy silk-like white fur. The whole animal is changed and is also double the size of the original species, and yet we are informed that after a few generations all the English rabbits put on these strange and interesting forms and appendages.

There has also originated the Angora cat so very peculiar in its long white silky fur, its large size and general resemblance to the Arctic Fox, that naturalists have sought

to erect it into a new species. There also the Brahmin cattle, with humps like the buffalo and of immense ears, are said to preserve all these peculiarities. Several of the above varieties of singular animals have recently been brought from Turkey to Charleston by Dr. Davis, and have awakened the surprise of all who examined them.

If the advocates of the plurality in the races will explain to us the causes of these extraordinary varieties in animals in Asia, we will be better prepared to give an explanation of the causes which have produced the varieties of men in Africa. Suffice it to say, both exist. Geological and thermometrical researches in these two regions of country producing effects so diametrically opposite, might perhaps aid us in elucidating these at present mysterious operations in nature.

CHAPTER X.

THE WISE ARRANGEMENT OF THE CREATOR IN THE ORGANIZATION OF THE HUMAN CONSTITUTION, TO PRODUCE VARIETIES ADAPTED TO EVERY CLIMATE.

That it was a wise provision of a beneficent Creator, in adapting the constitutions of animals to the peculiar climate of Asia we must all admit ; but how was this effected ? By creating new species of animals with peculiar organizations, or by so constituting them that they would produce varieties, suited to the climate without the necessity of resorting to a miracle in creating new species ? The latter we perceive was done—varieties have sprung up from original species, and no new species have been created. If this has been the process in Asia in the lower animals, is it not reasonable to suppose that the same law

has governed the Creator in the distribution of the races in Africa? They have not departed as widely from their original forms, as have the animals that exist on the same continent further to the North in Asia.

That the climates in Africa differ widely from those of other portions of the world is evident from the fact, that in the regions from which our negroes have been derived, the white man cannot exist. In order to prepare his constitution for a residence in that portion of Africa which is the home of the negro, it would seem to be requisite to subject him to the same process through which his ancestors passed during the period of many generations before the extreme of the African type was formed. This is not likely to be done, hence the constitution of the white man being unacclimated in Africa, soon sinks under the effects of miasma generated in those regions.

In what portions of South Africa the negro type originated it would be idle to conjecture. Many regions of this singular country are elevated, and the inhabitants derive a precarious subsistence from a parched soil, surrounded by burning sands. For hundreds of miles there are wide uninhabitable deserts where there is neither dew nor rain. "On the gold coast, Isert saw the thermometer of Fahrenheit at $95\frac{1}{2}^{\circ}$ within an apartment whilst it was standing at 134° in the open air." "Terrible hurricanes prevail between Cape Verga and Cape Palmas."—"An East wind rises in Benin and extends to the gold coast; it brings on a dry haze, the horizon is darkened, the skins of men and animals become contracted and chopped." Near the sources of the Senegal, the Niger and the Gambia, there is a nucleus of mountains which are the sources of these rivers." "The gulf of Guinea receives the Formosa, the Calabar and other broad

and deep streams, which form at their termination a Delta larger than that of Egypt." "In the slave coast, the maritime or flat country, is broader than that of the gold coast." In other portions such as the kingdom of Waree to the South of Benin the country is flat and marshy,* intersected by rivers and many sluggish streams. "In the kingdom of Benin there are no stones in the country, and the soil is so soft that the river detaches several acres at a time."—"The moveable Islands thus formed are the dread of seamen. The climate is one of the most deadly to the European constitution. M. Palisot de Beauvois calls it pestilential." The long list of names of those that have perished in their attempts to explore the interior of Africa are sufficient attestations of the pestilential effects of the climate. The expeditions of the British Government to explore the Niger by steamboats, scarcely reached the mouth of the river through the Gulf of Benin, ere the crews were prostrated by disease, one only of the naturalists, a personal friend of ours, was providentially spared to navigate the steamer on its return; nearly all the crew had died. The crews in British and American vessels of war have often taken the African fever before they had arrived within several leagues of the shore. If the constitution of man in such a country can in a succession of generations become assimilated to a climate so peculiar as this, why may not such a climate produce changes in the forms and colors of its inhabitants?

The negroes from Africa, on their first arrival in America, did not require to become acclimated; on the other hand their descendants who returned to Liberia and Sierra Leone, all had to undergo what is termed a seasoning, and hundreds of them died on the first season under the effects

*Malte Brun's Universal Geo., vol. 4th, p. 238.

of the climate. Some of our opponents are eminent anatomists, physicians and chemists, and we are proud to rank not a small number among our personal friends and correspondents. If they by the aid of their knowledge, for we confess our ignorance, can give us any satisfactory analysis of the peculiar miasma in South Africa, so deleterious to the constitutions of the black, as well as the white races that have been born in other countries, we may perhaps be furnished with some clue to the discovery of those secret causes that have produced inferior and very peculiar races in that country.

The form and features of the negro race we admit have undergone no change in their native regions for ages past—they may possibly have been thus constituted even in the days of Herodotus and Homer, and will remain so till the end of time, because they have now attained to the constitution, feature and color best adapted to their climate. But were those portions of South Africa which now present the strongest characteristics of the true negro type, by some great convulsion of nature suddenly elevated with all its present inhabitants to the altitude of Mount Atlas, we have reason to suppose from what has occurred in other regions that in the course of generations and centuries varieties would spring up better suited to their new situation, which would multiply by admixture with the existing races whilst the latter would gradually diminish, and thus in time a new race adapted to the peculiar region would become the inhabitants of such a changed portion of our earth.

CHAPTER XI.

BENEVOLENCE OF THE CREATOR IN ENABLING THE SEVERAL RACES OF MEN TO LIVE IN DIFFERENT CLIMATES.—THE DUTIES OF MASTERS TO THEIR DEPENDENTS.

As far as colour and the structure of hair are concerned, we have not observed that any striking changes have taken place in the Africans since their first residence among us. It will be recollected, however, that they belong to a permanent race whose characteristics have become organic, that a few generations have only passed since their introduction, and moreover that on our seaboard especially, they are constitutionally adapted to the peculiarities of our maritime climate. Here the negro enjoys better health in the vicinity of the rice fields, and arrives at greater longevity than he does in the mountains. He requires not to be acclimated, but is constitutionally at home along the shores of our sluggish rivers, and in situations adapted to the cultivation of indigo, cotton and rice, where a similar exposure would prove fatal to the life of a white man. Short-sighted men may ascribe all this to accidental causes and the results of blind chance; we confess, however, we view it in a different light—we see in it evidences of design—we regard it as a merciful provision of the Creator in imparting to the human constitution the tendency to produce varieties adapted to every climate and every country. If we can render the condition of a race of men, stamped with inferiority, more happy here than it was in their native land,—if we can elevate their moral characters, instruct them in the duties they owe to their Creator, and give them the consolations and hopes of a future life,

then are we their benefactors. We are not answerable for the manner in which they were introduced. In this, the natives of the North of our own country and of England, bore a more conspicuous part than the people of the South. Their philanthropy has since been exercised in endeavours to atone for the errors of the past, in devising the means of improving their condition. Our experience affords us the most undubitable proofs that thus far they have not been able to comprehend the peculiarities in the African character, and that hence their labours have been futile. Their admissions with a remarkable degree of unanimity, are made without reserve, that the blacks of the North are the most degraded of their population, and we can state from personal knowledge, that the professors of religion among the coloured people are, at a low estimate, three times as great in the South as in the North in proportion to the population.

Be this as it may, we must not forget that whilst we leave our brethren at the North to devise those plans which they may conceive best suited to improve the condition of those within the sphere of their influence,—a mission is also assigned to us, calculated to call forth the exercise of our minds and the display of our benevolence. Those that reside among us, although in an inferior position, are a portion of our household; we are therefore responsible for the manner in which our duties are performed in promoting their usefulness and comfort, and furnishing them with the means of becoming acquainted with those doctrines which awaken in the human breast the hopes of immortality. In this particular, the situation of the African is unquestionably more favorable in our Southern States than it was in his native land, where to slavery was added despotism, heathenism, and the most degrading vices.

The ways of God are dark and inscrutable to man—he converts evil into good, and often causes the wrath of man to praise him. If Africa is ever destined to become civilized and christianized the first dawn of light to all human appearances has been reflected on her from the Southern States of America. On the other hand, if the negro by his constitutional adaptation to labour in situations where we would find only disease and degeneracy, contributes to our wealth and comfort, then is he also our benefactor, and hence we will mutually have reason to bless the wise provision of heaven in so constructing the human frame in the various races of men, that they in their several gradations can mutually benefit each other, by cultivating every soil, the products of which are so necessary to the support of man, and by this means binding together the whole human family in one bond of universal dependence and brotherhood.

These people are the peasantry of our Southern land—they are the members of our households—they have been the nurses of our mothers and wives, and are the playmates of our children. If the efforts to degrade them into a different species, incapable of receiving the truths of Christianity,* are countenanced from political motives, they must inevitably fail, for they are not only unwise and unphilosophical, but being an embodiment of a scientific error with a political folly, it never can unite us in sentiment. If we, however, assume the higher grounds of Christianity as our authority, we will stand on a foundation which cannot be shaken. Here we may all be united in knowing and defending our rights, and learning our obligations. The master is here directed how to perform his duties with humanity, and minister according to the

* Nott's Lectures, p. 17.

best of his abilities to the temporal comforts, the spiritual wants, and the enduring happiness of his humble fellow men, and the servant is here taught the duty of obedience and gratitude to his earthly protectors, and of accountability to God.

Although we were born in a then slaveholding State, and have never resided in a State where the African did not, at the time, exist both as a slave and a freeman, yet, our observations were made on two widely separated latitudes, New York and Carolina; in the latter State, we have resided for the last thirty-five years. From these opportunities so amply afforded us, we have been irresistibly brought to the conviction, that in intellectual powers the African is an inferior variety of our species. His whole history affords evidence that he is incapable of self-government. His inferiority, however, in intellect, does not prove that he is not a man. Our child that we lead by the hand, and who looks to us for protection and support, is still of our own blood notwithstanding his weakness and ignorance. The feeble-minded who claims our indulgence and awakens our sympathy, and the pauper who is supported by our charity, will not on that account be driven from the pale of humanity. We might select thousands of the Caucasian race that are inferior to thousands of the more intelligent Africans. As the deficiency in the former would not prove that they were not Caucasians, so a lower grade of general intellect would not exclude the negro from the species to which we belong.

This difference, in point of intelligence, is equally observable in the varieties that exist in the lower animals, and in their organization and size is still greater. How much superior in intelligence are the races of setters, the Newfoundland or the shepherd's dogs, to those of the bull-

dog and the common house-dog, etc. ! How much more intelligence is there in the eye and the whole demeanor of the Arabian horse to that of the dull cart-horse ! How much more gentle, tractable, and we might almost add civilized, are the races of the improved breeds of cattle to our native species ! We observed that the light hedges of England, not four feet high, were sufficient to retain large droves of cattle, which would have presented no obstruction to, and would have been pitched over by, our long-legged Carolina cows, in cool defiance of so trifling a barrier. In all these species there are inferior varieties which would perpetually remain so, unless crossed with other breeds ; yet we have not regarded them as different species because they were inferior breeds, nor should we on the same principle regard the African variety of men as of other species, on account of their inferiority in intellect.

CHAPTER XII.

IMPROVEMENTS IN THE SKULL AND PHYSICAL DEVELOPMENTS OF THE AFRICAN RACE ; THE PROBABLE EXTENT TO WHICH THESE IMPROVEMENTS ARE SUSCEPTIBLE.

Our experience has produced a conviction that the African race is capable of making considerable advancement, but as far as we have been able to observe, a few generations of treatment under favourable circumstances, will bring them to a full development of their powers, beyond which, the peculiar variety we have existing among us, have given no evidence that they are capable of advancing. In four counties in the State of New York, those of Rensselaer, Schoharie, Albany and Dutchess, with which we were most familiarly acquainted in early life,

there were in 1812, several thousand full-blooded negroes, generally from the second to the fourth generation, since their progenitors had been imported from Africa. They were well fed and clothed, and living among the whites where the latter greatly predominated, they had acquired much of their intelligence. Many of them spoke either two, or all of the three languages then in use in those parts of the State, the English, German and Holland. They endured the climate nearly, if not quite, as well as did the whites. We recollect that one, who was our servant and humble companion from boyhood—in driving us in a sleigh in a cold wintry day, when the thermometer was below zero, remained uninjured, whilst we, who were protected by a buffalo-robe, had our toes and ears frozen.

They were also as long-lived as those of their own colour residing in the South,—we recently read a notice of the death of a black man named Joseph Barber, who died in Dutchess county (New-York) poor-house, in July 1849, aged 116 years.

The laws of the State subsequently gave these people a freedom to set up for themselves, when in consequence of having been removed from the control and protection of kind masters and guardians, they almost immediately degenerated, and by idleness, intemperance and want, nearly the last remnants of them are now, after the short period of thirty years, fast disappearing.

Whilst we are free to admit that the negroes cannot, either in our country nor in any other, be transformed without amalgamation into a white race, we do not however accord with the views of those who represent them as having undergone no change either in form or skull since their introduction into our country. We have for many years had passing before our eyes innumerable evidences to con-

vince us that this is not the fact. Whilst we perceive no change either in color or hair, we are fully satisfied that even in the maritime country of Carolina there is, in form, in feature, and especially in skull, a very striking departure from the original type. We still have some hundreds of native Africans remaining in South Carolina, some of whom present the tatoo received in Africa. They belonged to tribes that were the progenitors of our negroes. They present in their thick lips, the curvature of the leg, the projection of the heel, the narrowness of the forehead, which is generally wrinkled, and in the thickness of the lower jaw, such striking peculiarities when compared with our native negroes of unmixed blood that have been born in this country, and are but three or four generations removed from their African forefathers, that we have for many years past been in the habit of detecting their origin at a glance. We may however state one fact without the fear of contradiction. If the cast of the skull of an African, from the rich collection of skulls in the cabinet of Prof. Morton, and labelled "negro of whose history nothing is known," and which is staring us in the face while we are penning these lines, is the true African type, then our negro race in the South has unquestionably presented a most remarkable improvement in the skull. We do not doubt that this cast is an exact copy of the original,—it also bears a characteristic resemblance to the figure of the skull of a negro in Lawrence.* We have however compared this cast with more than fifty skulls of native born negroes, and in all but one which resembled it very closely, and with whose origin we are unacquainted, there were most marked differences and very wide departures.

* Nat. Hist. of Man, pl. 6.

CHAPTER XIII.

PAUCITY OF MATERIALS IN AMERICA TO WARRANT IN TEACHING THE DOCTRINE OF A PLURALITY IN THE HUMAN SPECIES.—HOW FAR A COMPARISON OF SKULLS AIDS US IN DECIDING ON SPECIES.—WEIGHT OF THE BRAIN AND CAPACITY OF SKULLS BY PROFESSORS TIEDEMAN AND MORTON.—VARIETIES WHEN FORMED DO NOT REVERT BACK TO THE ORIGINAL FORMS.

In accordance with the rules by which we have always endeavoured to be governed, of expressing no views on any subject which we had not personally investigated, we recently strove to institute comparisons of the skulls of various races of men, and especially of the descendants of Africans. We hoped in this manner to be able to speak more advisedly on a subject, the examination of which is always attended with great difficulty. Although in our examinations of the forms of the lower orders of mammalians, we have been compelled to attend very closely to comparative anatomy—we felt ourselves unskilled in the dissections and those minute comparisons in the human species which were so essential in an examination of this branch of the subject. According to our usual custom, we sought for information from the highest sources from which it could be expected to be derived. We went to the Medical College of this City, where with characteristic liberality we were assisted in examining a considerable number of skulls, and where all the aid that we required in an investigation of this subject was cheerfully proffered us. We however ascertained that the skulls that were preserved, were only those of the Caucasian and the descendants of the African; nor were there any means of obtaining any satisfactory history in reference to the latter. There were no skulls of the Mon-

golian, the Malay, or aboriginal American races, and none of the kindred races of Africa. We of course could not attach a shadow of blame to the Professors of the Institution,—they are gentlemen of the highest attainments in their several departments, and some of them we would state from personal observation, are not inferior to any we heard in similar departments in the Universities of Europe. But we ascertained that there were not here or in any private collections in Charleston, any materials which would aid us in a comparison of the kindred races which compose the human species.

This fact verifies what we stated in the preceding part of this essay, that the opponents of the theory of the unity of the races were not in possession of such materials as would furnish them with the means of disproving our doctrine. In our medical schools, indeed—in the present stage of these inquiries—such teachings in a lecture room are not only uncalled for, but are impolitic, unwise, and fraught with unmixed evil. With the exception of the valuable and extensive collection of skulls which exists in the cabinet of Prof. Morton, we believe that there is not a medical college in America that possesses any series of skulls even of the various races of men, much less of the skulls and skeletons of the domesticated animals. Although we are far from believing that either in domesticated animals, or in the varieties of the human species, the skulls are in themselves the only guides in the designation of species, nevertheless, if such an anatomical museum were open to the inspection of the student of medicine, we would not fear the result; nature would teach a lesson of truth, against which speculation and sophistry would prove a weak assailant. We here perceive how poorly our opponents in America are provided with armor and weapons to enter into this

warfare against public opinion and the teachings of nature. We are not unwilling, therefore, in the present stage of our knowledge, and of our scanty materials, to permit this subject to remain in the hands of men of science, who possess leisure, and are furnished with ampler materials than we now possess, and have access to scientific journals for the promulgation of their opinions. The doctrine of the unity or the plurality of the races is not an indispensable part of medical education. Our professors of surgery and anatomy are not necessarily expected to be naturalists. Even the celebrated Owen, the most eminent of comparative anatomists, while he gave the most careful dissections, and pointed out those anatomical differences by which genera and species, either approached to or departed from each other, seldom ventured either on naming or describing a species. Anatomy and Physiology are only branches of a science which the naturalist is obliged to study, and he accordingly after giving the aid which his department could afford, left the designation of species, especially of recent animals to the naturalists to whom it more legitimately belonged. Among our physicians not one in a thousand has devoted himself to any branch of natural science, nor can we conceive that this, although desirable, is positively essential to his profession. The legitimate duty of the professor is to impart instruction in regard to the anatomical and physiological organization of man, and to point out all those variations which are found to exist in individuals or of races. How far the doctrine of the plurality in the races, is openly taught in any medical school in America, we are not prepared to state; but we have no hesitation in saying, that if in the present stage of our knowledge on this subject, and the scanty materials we have now on hand in our country, such an attempt, even by insinuation, or in whatever way

it may be disguised, should be made, it would be foreign from the humility and modesty which are the characteristics of true science ; and more especially since nearly the whole of the christian world regard this as a grave subject in which higher and immeasurably greater interests are involved. Favorable as we have ever been to the fullest investigations in science, and unwilling as we are to shackle the human mind, we are, nevertheless, not insensible to the fact that errors in science imparted to the naturally skeptical minds of the young, exercise an important influence on the conduct and happiness of after life. The American mind thus far is cast in a religious mould ; public sentiment as at present constituted, when led to suppose that any of its institutions are undermining the foundation of higher hopes, may be compared to the ripples of the sea acting with slow but sleepless force on the base of a pyramid which will gradually be worn away with every returning wave, until the foundation can no longer support the superstructure, and it is at last prostrated to the earth by a breath of air, although it may have been as firmly planted as the pillars of Hereules.

Returning to our subject, from this almost unavoidable digression, we felt ourselves compelled from the paucity of materials that were available in our country, to be dependent on foreign anatomists and physiologists, whose ampler materials and vastly superior knowledge enabled them to furnish us with the information we so much needed. After the first half of our article was passing through the press, we obtained the work of Lawrence on the natural history of man, and a paper of Dr. Tiedeman, Professor of Anatomy and Physiology in the university of Heidelberg, printed in the Philosophical Transactions of the Royal Society in 1836,* and another recently sent us on the same subject by

Prof. Morton. Dr. Tiedeman is admitted to be one of the ablest Professors of Germany, a country so rich in men of intellect, and of patient, laborious, and profound investigators of scientific truth. His able paper contains the result of his examinations on the brain of the negro, compared with that of the European and the orang-outang. We will here give such extracts from his valuable article as have an important bearing on the subject of our present inquiries. He says we shall first try to answer the following questions:—"Is there any important and essential difference between the structure of the brain of the negro and that of the European? And 2ndly, Has the brain of the negro more resemblance to that of the orang-outang than the brain of the European?"

He continues: "I have taken the materials for such a comparison from my researches on the brain and skull of man and lower animals, for which purpose I have consulted the most celebrated anatomical museums, both on the continent and in Great Britain.

"We must first determine the weight and dimensions of the brain of the European, then that of the negro, and compare them together?

"Sœmerring was the first to show that the human brain in comparison to the size and thickness of the nerves, is larger than that of any other animal, even the elephant and whale, both of which have an absolutely larger brain than man. Blumenbach's, Ebel's, Cuvier's, Trevirianus's, and my own researches, have sufficiently corroborated this. It is also satisfactorily shown that the organization of the human brain is far superior to that of any other animal, not excepting those apes which have the closest resemblance to man.

"The weight of the brain of an adult European varies

between 3lb. 2oz. and 4lb. 6oz. The brain of men who have distinguished themselves by their great talents is often very large,—the brain of the celebrated Cuvier weighed 4lb. 11oz. 4dr. 30gr. Troy weight,—the brain of the celebrated surgeon Dupuytren, weighed 4lb. 10oz. Troy weight. The brain of men endowed with but feeble intellectual powers, is, on the contrary, often very small, particularly in congenital idiotismus,—the brain of an idiot 50 years old weighed only 1lb. 8oz. 4dr.

“ The female brain is lighter than that of the male,—it varies between 2lb. 8oz. and 3lb. 11oz. I never found a female brain that weighed 4lbs.

“ Although Aristotle has remarked that the female brain is absolutely smaller than the male, it is nevertheless not relatively smaller compared with the body, for the female body is in general lighter than that of the male. The female brain is for the most part larger than the male, compared with the size of the body.

“ *Weight of the brain of a negro.*

“ Camper’s assertion that the faeial angle is smaller in the negro than in the European, has led many anatomists to the supposition that the negro has a less quantity of brain than the European.

“ The weight of the brain of a large negro was 49oz. : the general weight of the brain of man is from 37 to 52oz.

“ We can also prove, by measuring the cavity of the skull of negroes and men of the Caucasian, Mongolian, American, and Malayan races, that the brain of the negro is as large as that of the European and other nations.

“ *Remarks on the state and capacity of the cavity of skulls.*

“ 1. I weighed the skull with or without the lower jaw bone.

“ 2. I then filled the cavity of the skull with dry millet

seed, through the foramen occipitale magnum,—the skull was then weighed again, carefully filled.

“ 3. I then deducted the weight of the empty skull from that of the filled one, and so obtained the capacity of the cavum cranii.

“ The following tables record the results obtained from a number of negro, European, Mongolian, American and Malayan skulls weighed in this manner.

“ I only weighed those skulls of whose authenticity I was convinced.

“ I made use of the Apothecary or Troy weight:

“ 1 pound=12oz. ; 1 ounce=8drs. ; 1dr.=60grs.”

He then proceeds to give us the results of his examination of the cavum cranii in 236 skulls. He measured, 41 negroes ; 77 Caucasian ; 24 Asiatic ; 4 Egyptian ; 20 Mongolian ; 27 American ; and 43 Malayan.

These tables are too long for insertion here ; we have however condensed what he has given in full. We will give the highest number in each of the races—then the lowest, and then add the average in each race, which we have ascertained after laborious arithmetical calculation.

TABLE.

ÆTHIOPIAN RACE.					Capacity of the cavum cranii.			Capacity of the cavum cranii.		
MALE SKULLS.					Oz.	Dr.	Gr.	Oz.	Dr.	Gr.
Greatest Capacity,	-	-	-	-	54	2	33			
Least	"	-	-	-	31	5	16			
Average of the measurement of 38 skulls,	-	-	-	-				37	6	24
FEMALE SKULLS.										
Greatest capacity,	-	-	-	-	31	4	0			
Smallest	"	-	-	-	24	7	39			
Average of 3 skulls,	-	-	-	-				29	1	13
CAUCASIAN RACE.										
MALE SKULLS—77.										
Greatest capacity,	-	-	-	-	77	3	56			
Lowest	"	-	-	-	32	6	0			
Average of 77 skulls,	-	-	-	-				41	2	30
FEMALE SKULLS—12.										
Greatest capacity,	-	-	-	-	39	5	30			
Lowest	"	-	-	-	30	4	0			
Average of 12 skulls,	-	-	-	-				35	2	4
ASIATIC NATIONS.										
Greatest capacity,	-	-	-	-	41	5	6			
Lowest	"	-	-	-	27	6	30			
Average of 24 skulls,	-	-	-	-				36	0	36
EGYPTIAN NATION.										
MALE SKULLS.										
Greatest capacity,	-	-	-	-	44	6	11			
Least	"	-	-	-	35	5	0			
Average of 4 skulls,	-	-	-	-				40	4	56
MONGOLIAN RACE.										
MALE SKULLS.										
Greatest capacity,	-	-	-	-	49	1	22			
Least	"	-	-	-	25	0	18			
Average of 18 skulls,	-	-	-	-				38	7	55
AMERICAN RACE.										
MALE SKULLS.										
Greatest capacity,	-	-	-	-	59	0	0			
Least	"	-	-	-	26	1	44			
Average of 24 skulls,	-	-	-	-				39	3	12
MALAYAN RACE.										
MALE SKULLS.										
Greatest capacity,	-	-	-	-	49	1	45			
Least	"	-	-	-	30	5	0			
Average of 38 skulls,	-	-	-	-				39	6	17

After these measurements, Prof. Tiedeman sums up the evidence in the following language :—

“ It is evident from the comparison of the *cavum cranii* of the negro, with that of the European, Mongolian, American and Malayan, that the cavity of the skull of the negro in general, is not smaller than that of the European and other human races. The result of Hamilton’s researches is the same. I hope this will convince others that the opinion of many naturalists, such as Camper, Sæmmering, Cuvier, Lawrence and Virey, that the negro has a smaller skull and brain than the European, is ill-founded, and entirely refuted by my researches. The mistaken notion of these naturalists, arose from the application of Camper’s facial line and facial angle on a few skulls of negroes living on the coasts, who, according to credible travellers, are the lowest and most demoralized of all negro tribes.

“ The general character and marks of the Ethiopian race as given by naturalists cannot be received as universal, nor are they strictly applicable to the greater number of the negro tribes in the high lands of the interior of Africa. These characters are—the skin black; the hair black and woolly; the skull compressed laterally; the forehead low, depressed, slanting, and narrow; the cavity of the cranium smaller and reduced, both in its circumference and in its transverse diameters; the eyes prominent; great development of the face, and projection towards its lower part; the cheek-bones prominent; the jaws narrow; the superior incisive teeth oblique; the chin retracted; the nose broad, thick and flat; the lips, particularly the upper one, thick and projecting. This is the countenance of the Mosambique and Guinea negroes, but it is not the feature of the natives of the high lands of Africa. The truth of this assertion is fully attested by the latest African

travellers. Winterbottom* says of the tribes of Timmanu and Loosoo negroes, in the mountainous districts of Sierra Leone:—‘The sloping contracted forehead, small eyes, depressed nose, thick lips, and projecting jaws, with which the African is usually caricatured, are by no means constant traits; on the contrary, every gradation of countenance may be met with from the disgusting picture too commonly drawn of them, to the finest set of European features.’

“Tuckey† says the same of the Jalaffs or Oualafs; Meridith‡ of the Fantees; Adams|| and Bowdich§ of the Ashantees, the Dahomeys, and the negroes of the banks of the river Chamba; they have good features, neither broad nor flat noses, nor thick lips. The Mandingos on the banks of the river Gambia, Joliba, the higher Senegal and Niger, as also the Foulahs or Fallahs, and Fallatahs in the interior of Africa, in Bondu, Timbuctoo, Housan, Sudan, Bornoo and Kaschua, vary but little according to Mungo Park,¶ Denham, and Clapperton,** excepting in colour, from the Europeans. Their skin is not so black as that of the negroes on the coast of Guinea, and their black hair is not so woolly, but long, soft, and silky. They have neither broad flat noses, thick lips, nor prominent cheek-bones; sloping contracted foreheads, nor a skull compressed from both sides, which most naturalists consider as the

* Account of the native Africans in the neighbourhood of Sierra Leone, vol. 1, pp. 184, 198, London, 1803.

† Narrative of the Expedition to explore the river Zaire, London 1828.

‡ An Account of the Gold Coast of Africa, London 1812.

|| Remarks on the country extending from the Cape Palma to the river Congo, London 1823.

§ Mission from Cape Coast Castle to Ashantee, with a statistical account of that kingdom, and geographical notices of other parts of the interior of Africa, London 1819.

¶ Travels in the interior districts of Africa, London 1799.

** Travels in interior parts of Africa, London 1820. Clapperton's Second Travels in the interior of Africa from Badagry to Succatu, London 1829.

universal characteristics of a negro. Most of them have well-formed skulls, long faces, handsome, even Roman or Aquiline noses, thin lips and agreeable features. The negroes of these nations are as finely formed as the men, and are, with the exception of their colour, as handsome as European women.

“Somerville, Barrow,* Lichtenstein,† and Burchell, have shown that the Caffres and Bachapins or Bitchuanas, have the same form of skull, and the same high forehead and prominent nose as Europeans.

“Credible travellers and accurate observers, confirm also what the celebrated Blumenbach‡ said thirty years back, ‘that the exterior of negroes gradually approaches to that of other races and acquires by degrees their fine features.’”

He then proceeds to compare the spinal cord, the cerebellum, the cerebrum and nerves of the negro with those of the European, and finally draws the following conclusions from these anatomical researches.

1. The brain of a negro is upon the whole quite as large as that of the European and other human races,—the weight of the brain, its dimensions, and the capacity of the cavum cranii prove this fact. Many anatomists have also incorrectly asserted that Europeans have a larger brain than negroes.

“2. The nerves of the negro, relatively to the size of the brain, are not thicker than those of the Europeans, as Sæmmering and his followers have said—

“3. The outward form of the spinal cord, the medulla oblongata, the cerebellum, and cerebrum of the negro, show no important difference from that of the European.

*Southern Africa, vol. 1, c. 3.

†Travels, c. 18.

‡Beyträge zur Naturgeschichte, Th. 1. S. B. Goettingen, 1806, [Decas Craniorum, 11, p. 13.

“ 4. Nor does the inward structure, the order of the cortical and medullary substance, nor the inward organization of the interior of the negro brain show any difference from that of the European.

“ 5. The negro brain does not resemble that of the orang-outang more than the European brain, except in the more systematical distribution of the gyri and sulci—it is not even certain that this is always the case.”

Dr. Morton, in a recent paper, (Observations on the size of the brain in various races and families of men. 1849.) which he has kindly sent us, pursued nearly the same plan in obtaining the internal measurement of 623 human crania “made with a view to ascertain the relative size of the brain in various races and families of men.” He substituted leaden shot instead of seeds, and made his calculations by cubic inches.

The following was the result.

TABLE,

Showing the size of the Brain in cubic inches, as obtained from the internal measurement of six hundred and twenty-three Crania of various races and families of men.

	No. 1. Skulls	Largest. I. C.	Smallest. I. C.	Mean.	Mean.
MODERN CAUCASIAN GROUP.					
TEUTONIC FAMILY,					
Germans,	18	114	70	90	} 92
English,	5	105	91	96	
Anglo Americans.	7	97	82	90	
PELASGIC FAMILY,					
Persians, }	10	94	75	84	
Armenians, }					
Circassians, }					
CELTIC FAMILY,					
Native Irish,	6	97	78	87	
INDOSTANIC FAMILY,					
Bengalees,	32	91	67	80	
SEMITIC FAMILY,					
Arabs,	3	98	84	89	
NILOTIC FAMILY,					
Fellahs,	17	96	66	80	
ANCIENT CAUCASIAN GROUP.					
From the Catacombs. }					
PELASGIC FAMILY,	18	97	74	88	
Græcia-Egyptians,					
NILOTIC FAMILY,	55	96	68	80	
Egyptians.					
MONGOLIAN GROUP.					
CHINESE FAMILY,	6	91	70	82	
MALAY GROUP.					
MALAYAN FAMILY,	20	97	68	86	} 85
POLYNESIAN FAMILY,	3	84	82	83	
AMERICAN GROUP.					
TOLTECAN FAMILY,					
Peruvians,	155	101	58	75	} 79
Mexicans,	22	92	67	79	
BARBAROUS TRIBES,					
Iroquois, }	161	104	70	84	} 79
Senapi, }					
Cherokee, }					
Shashone, &c., }					
NEGRO GROUP.					
Native American Family,	62	99	65	83	} 83
American born Negroes,	12	89	73	82	
Hottentot Family,	3	83	68	75	
Alforian Family, }	8	83	63	75	
Australians. }					

There is no greater difference in the results which these several measurements have produced than might have been expected from the difference in the skulls subjected to examination.

It appears from Dr. Morton's measurements, that the German and Anglo-American heads, each averaged ninety square inches, and the English ninety-six. The Persian, Caucasian, and Armenian, eighty-four. The Indostanic family eighty, the Arabs eighty-nine, and the Nilotic family eighty. All these are arranged under the Caucasian group. The American Indians seventy-nine, and the Africans eighty-three. Thus the negro skull was less than the European, but within one inch as large as those of the Persians, Armenians, and Caucasians, and three square inches larger than two branches of the Caucasian race, the Indostanic and Nilotic.

These tables, which we have presented in the figures of Professors Tiedeman and Morton, will satisfy us of the utter futility of any attempt to divide the races of men into different species from the size of the brain. There were nine cubic inches difference in the average measurement, between the skulls of the English and Irish, and only four inches between the mean of sixty-two African skulls, and six native Irish. The largest African skull was ninety-nine, and the largest Irish only ninety-seven. This proves that a negro skull contained more brains than that of the largest Irishman, but it does not hence follow that he possessed more sense. The former had probably a larger frame than the latter. There was a difference observed by Tiedeman in the weight of the brain between the largest and smallest brain in the Caucasian group, of no less than 44 ounces, 5 drachms, and 56 grains; and Dr. Morton's measurement gives a difference of forty-eight square inches. The female

brain in all the races is from six to nine ounces less than that of the males; and yet females have on an average as much good sense and judgment, as their lordly masters, and always more prudence, fortitude, and moral principle. Large frames, such as are possessed by the English and the German races, are found to have proportionably large heads—light forms, such as the East Indians, have smaller heads—the female form is lighter than that of the male, and her head is consequently smaller.

We will offer no further comments, but leave the result to the calculation and sober reflection of our readers.

An objection might here be advanced on phrenological grounds, against this mode of measurement, although we do not perceive that Dr. Morton, who, by having embodied Combe's essay in his work, appears to be a believer in Phrenology, has in his last paper made any reference to the form of the skull. There is probably some truth in the general principles both of Phrenology and Physiognomy, as far as a well developed head and general harmony in the features of the countenance are concerned, but we are obliged to lay ourselves open to the charge of heresy, in professing ourselves unbelievers in either science. Yet were even the whole inexplicable doctrine of Phrenology proved to be true, and the brain capable of being mapped out, and described as George Combe has done,* into two orders, four genera, and thirty-five species or sentiments, these peculiarities, according to his own showing, would rather apply to individuals in each race than to the separate races. We confess if the designation of species was dependent on Phrenology, naturalists would be greatly perplexed in pursuing their further researches.

We have always regarded the arrangement of skulls ac-

* Morton's *Crania*, p. 83.

according to the theory of Blumenbach, as affording us only general views, and being to a considerable extent arbitrary. He himself gives us so many exceptions to the rule, that in a vast number of instances we are at a loss under which of his five varieties we can place many tribes, and a vast number of individuals. The Otaheitan head,* as far as the cranium is concerned, scarcely differs from that of the European. There is a peculiarity in the rounded skull of the Turk, which is not found in any other of the Caucasian family. The different heads presented by the mummies have no representatives in any race now in existence—the same may be said of the small heads of what are called the ancient Egyptians. There appears to have been a constant change going on in the crania as well in the characters and habits of many nations. If we select the extreme types of any of the races, we will see a wide difference ; but if we look among individual forms we will, in many instances, find it difficult to determine to which race they belong. Among many, skulls of negroes and Europeans, which are now before us, we find some where the two races approach each other so nearly that it requires much attention and a practised eye to distinguish between them ;—and were we to give the white colour and straight hair of the Caucasian to some of the skulls of the negro, the most practised anatomist and physiologist might be easily deceived.

* Blumenbach, tab. 26.

CHAPTER XIV.

THE COLOURED LAYER OF THE CUTICLE.—THIS PIGMENT EXISTS IN BLUMENBACH'S FIVE VARIETIES OF MEN.—REASONS WHY THE AFRICAN HAS UNDERGONE VERY LITTLE CHANGE SINCE HIS RESIDENCE IN AMERICA.

If we have not said sufficient to convince our readers that colour is not an essential characteristic in deciding on the human species, and that "identity of tint is not an essential character of race," we would yet remind them that almost every variety of colour is found in each of the five varieties of Blumenbach. * We have heard some of the believers in the plurality of species remark that the only difficulty in their minds in receiving the doctrine of the unity, consisted in the existence of the black pigment under the skin of the negro, which was absent in the white man. We would remind them of the fact that there are very dark if not black men among all the races that are arranged under the Caucasian family. If, as we must all admit, the cuticle or epidermis, the outer layer of our common integument, is nearly the same in the white and coloured races, then the rete or malpighii, or mucosum is the only seat of human colour. If then the individuals in any branch of the Caucasian family are dark coloured, they must necessarily possess this black pigment. Many of the Chinese are nearly as fair as our white race, whilst others are almost black. The pigment must then exist among the Mongolians in various shades from light coloured to black. The pigment which exists under the skin of the mulatto is of an intermediate colour between that of the white man and African. Many of the Caffres, in whose veins there runs no blood of the white man are, as we were

informed in a conversation with Professor Lichtenstein, who carefully examined them, fully as light coloured as the Portuguese, and possess finer forms. We have then among the Africans, races where the black pigment is absent, and we have some among the whites where it is present. The same may be said of the Malays—the same of the American Indians. Humboldt speaking of the fair tribes of the Upper Orinoco, says, “the individuals of the fair tribes whom we examined, have the features, the stature, and the smooth straight black hair which characterizes other Indians. It would be impossible to take them for a mixed race, like the descendants of natives and Europeans, and they are neither feeble nor Albinos.” Dr. Morton informs us of other races of Indians that are black, “the Charruas, who are almost black, inhabit the fiftieth degree of South latitude, and the yet blacker Californians, are twenty-five degrees North of the Equator.”* Here then we have the white transparent colouring matter, as well as the black pigment, existing in tribes that Dr. Morton asserts are positively composed of only one and the same race. It cannot fail, therefore, to be satisfactory, at least to him, that colour cannot be regarded as essential in the designation of a species, since he quotes and endorses the views of Humboldt, in reference to white races of Indians, points out to us a race almost black, and then another still blacker, which would be a little blacker than a coal could make them, and all these according to his essay are of one race, originating on our continent.

It was at one time supposed that the anatomical investigations of Fleuron's had resulted in proving from the marked and permanent differences in the cuticle existing under the integument of the white man and negro, that

* Morton's *Crania*, p. 69.

they were composed of different species. At a subsequent period however these structures in the tegumentary organs were investigated by the aid of the microscope, by Henle, Schwann, Purkinje, Simon, and several other professors of anatomy and physiology in Germany, the results of whose untiring labours are found in Muller's Archiv, between the years 1836 and 1839. We regret that we have not at present access to these papers, and therefore have it not in our power to give a synopsis of the several articles. They are contained under the heads of "Mikroskopische Untersuchungen," "Ueber die Ausbreitung des Epithelium im menschlichen Körper," and in several other papers whose titles we cannot now recollect. At the period of our visit to Berlin Dr. Henle and others were actively engaged in these investigations. Their researches led them to the conviction that the cells containing the black pigment under the skin of the African negro, resembled very closely a structure containing dark colouring matter in the diseased or dead bodies of white men. They also discovered that freckles, red blotches, &c. on the skin of white persons had their several origins in the pigment cells which gave these peculiar discolourations to the skin. As far as these investigations have been referred to in any of the scientific works published in Germany, that have come to our knowledge for the last ten years, there appears to be a unanimous conviction, that the organical differences between the skin of the negro and white man, or any of the races, were utterly insufficient to afford even an argument in favour of a plurality in species.

The question is often put to us by our opponents, why if our doctrine be true, the negro in a succession of ages may not change from a black to a white man in the native country of the latter, and why may not a white man on the

same principles become a negro in Africa? We answer the races are already established, and as far as experience in other departments of the animal creation affords us light on these subjects, varieties once formed, may produce other varieties, or they may sink into degeneracy and perish, but they cannot again be brought back to the races from which they originated,—no breeds of cows, horses, sheep, swine or birds, have ever reverted back to the original forms; we can scarcely doubt that this phenomenon will be the same in the races of men. New countries and climates may produce varieties among them, but their progeny, even though they may be removed to the native homes of their predecessors, never revert back to the original variety. Like streams that flow onwards, like fragments of rocks broken from precipices, like metals changed by the chemist's art, they exist in other forms,—they enter into other combinations, but never return to their original sources.

If this answer is not satisfactory to our opponents we would ask them in return—can you without an amalgamation convert the Shetland pony, the Carolina tackey, or the dray horse, into the form of the wild Tartarian horse, by any mode of feeding, training, or immigration?—Can you bring back the Durham cow to the *Bos taurus*?—the Merino, or the large tailed sheep to *Ovis aries*?—the Carolina hog to the wild boar?—the large Bremen goose to the original lag goose?—the Aylesbury or the East India duck to the original *Anas boschas*?—the powter or the fan-tailed pigeon to the original rock dove?—the golden pippin to the wild English crab?—the seckle pear to the wild iron pear?—or the cauliflower to the wild brassica, in ten thousand years? Permanent varieties put on the characteristics and tenacity of species.

We perceive then, that there are operations in nature, which

are constantly going on before our eyes, at which man may cavil, but for which no process of reasoning can enable him to assign a satisfactory cause : whilst we are groping in the dark, her laws are still uniform, and operate in the same unvaried manner, from the humblest plant and the minutest insect, up to reasoning man, the highest order in our world.

CHAPTER XV.

WHAT EFFECTS MAY BE EXPECTED TO BE PRODUCED BY CLIMATE
ON THE FORM AND COMPLEXION OF THE INHABITANTS OF THE
UNITED STATES.

We have from time to time seen in various publications, and especially in our daily prints, to which such matters are unsuited, many silly and ignorant remarks by some of our opponents, intending to prove that if the theory of the unity of the races should prove true, we in the Southern United States must in the slow process of time become nearly black. A plain statement of facts, will, we think, be sufficient to prove that if an attempt is here made to enlist the prejudices of Southerners, they ought at least to have no weight with Carolinans and those neighbouring States situated within the same parallels of latitude.

The aboriginal inhabitants of our country descended from varieties differing widely from our own, and we have reason to believe from the Mongolians of the North on the Eastern continent, and a considerable admixture in many of the Southern tribes with the Malays. Our native Indian is darker in colour than his fairer neighbours who are superceding him and crowding him westwardly,—he possesses straight hair, an intelligent countenance, and we have

seen many fine forms and well developed heads among these different tribes, that would not suffer in comparison with thousands among the Caucasians. But we need be under no apprehension that our descendants in the Southern States will ever approach the Indian or the negro in form or feature. We are descended from races that have long become permanent, and we have shown how tenacious are the peculiarities which attach to races once formed. We have descended either from the Teutonic, the Anglo-Saxon, or the Normans, three of the most civilized and intellectual branches of the Caucasian family, with the finest forms and the most perfect developement of the head.

Let us even suppose that the views of Pliny, Buffon, and Smith, should prove true in regard to the effects of warm climates on colour—a theory which is not, that we are aware of, at present defended by any of the advocates of the Unity, and which is just as unphilosophical and unsatisfactory as many other theories which the believers in the Plurality have from time to time proposed and finally rejected—what effects would a Southern climate produce on the form and colour of its inhabitants?

All who have instituted a comparison between the climates of the Eastern and Western continents are aware of the fact that our country North of the tropics, is immeasurably colder than that in Europe under similar latitudes. London where the winters are so mild that several tropical plants flourish in the open air, is in the latitude of Labrador, which is almost uninhabitable in consequence of intense cold. From the observations which have been made in both continents on climatology, it has been ascertained that the European continent on the North is on an average between eleven and twelve degrees warmer than that of

America. Dr. Ramsay* considers the difference twelve degrees. Humboldt enters into a more correct and scientific comparison based on the numerical results of mean annual temperature. In high Northern latitudes the difference is immense. This difference is lessened as we proceed farther towards the South, and within the tropics the parallels of latitude† on the opposite continents are equal in temperature. Nain on the coast of Labrador in lat. 58° is $20^{\circ} 7'$ colder than Gottenberg in the same latitude. Halifax is $13^{\circ} 8'$ colder than Bordeaux; New York $6^{\circ} 8'$ than Naples. Hence it will be perceived that in drawing a parallel of the climates on both continents, we must be guided not by the degrees of latitude indicated on our maps, but by thermometrical observations on the two continents, and also that although the temperature of Canada and the United States is much lower than that of the corresponding latitudes in Europe, the difference is not the same under different parallels; we must therefore compare separately the winter and the summer temperatures of the opposite coasts. We are not aware that any thermometrical observations on the various latitudes on the two continents, that will prove perfectly satisfactory are on record. As far, however, as we have been able to collect them, it would appear that Massachusetts possesses the climate of Denmark; Washington nearly that of Bordeaux, in France; and South Carolina, portions of North Carolina, Georgia, Alabama, Mississippi, Louisiana, and all the States lying between $32^{\circ} 01'$ and $35^{\circ} 10'$ from the ranges of the thermometer as indicated in Charleston, Columbia, and a few other places for the last ten years, compared with similar observations made in the South of Europe finds its temperature in the Eastern continent about 6° farther to

*History of South Carolina, vol. 2, p. 49. †Cosmos, vol. 1, p. 314.

the North of our parallel. This gives to South Carolina and the other States under the same parallels the climates of those countries lying between the latitudes of $38^{\circ} 01'$ and $41^{\circ} 10'$, viz : of Lisbon, in Portugal; of Madrid, and Barcelona in Spain; of the Island of Sardinia in the Mediterranean; of Naples, Rome, and other parts of Italy; of Athens in Greece; of Smyrna, Constantinople, Angora in the Vale of Cashmere in Turkey, running through the Caucasian mountains, bordering on Circassia, and including Georgia in Asia; the inhabitants of the last named country are represented as even more perfect in form, and the ladies more beautiful than the Circassians.

It will moreover be recollected, that nature, in all her forms, presents the most striking similarity between the two regions on the opposite continents thus geographically considered. The quadrupeds, birds and plants, although of different species are represented on both continents by nearly the same genera and very closely allied species. Our opossum is almost the only animal that can be fairly regarded as a perfect stranger among the forms of animated nature in those regions.

Hence it will be perceived, how idle and unphilosophical are the speculations, and how ignorant of the geographical temperature of countries, are those who, in our Southern States, would endeavour to create a prejudice against those who advocate the theory of the unity of the species of man, from the fact of our Southern latitude, and the consequent degeneracy of our posterity, since were we even to allow the full force of the opinions of Pliny and his successors in opinion, their whole theory would be in favour of our climate, inasmuch as a kind providence has cast our lot in the very centre of a climate from whence in the East have proceeded the most perfect heads and the fairest forms

among all the nations of the earth. We value as lightly the theory of Pliny, Buffon, and those great men who supported this doctrine in former ages, as we do the unreasonable conclusions their opponents would force the public to deduce from it, and take no pride at any attempts at showing how favourably our climate is fitted to produce an Apollo or a Venus, but would much rather indulge the hope that by cultivating the intellectual and moral powers it would produce a Leibnitz, a Cuvier, a Bacon, a Newton, and a Sir Wm. Jones. We would, however, remark that if any material variations were in future to take place in our Southern country in the Anglo-American form and complexion, we would long ere this have had evidences of the coming change. In the Southern States, there is, we think, a stronger tendency to dark eyes and black hair than in colder climates; an exposure to a warmer sun may produce a darker shade in colour which is not transmitted, but we can observe no change in skull, in form, or feature, and we hope we may not be accused of an attempt to feed the vanity of our fair friends if we add, that the females in our Southern cities, both in form and complexion, may favourably compare with those of any other country.

We may, by an indulgence in indolence and luxury easily become degenerated, but this will be rather owing to our own want of energy, and a neglect in the cultivation of the moral powers than to the climate we inhabit, or the noble ancestry from whom we have descended.

CHAPTER XVI.

NEW THEORIES IN REGARD TO THE ORIGIN OF THE RACES, AND
A NEW METHOD PROPOSED FOR THE DESIGNATION OF SPECIES.

A new theory in regard to the origin and distribution of the human family, has recently been proposed by Mr. Van Amringe.* His work which occupies seven hundred and thirty-nine pages is principally taken up with severe criticisms on the theories of Prichard, Lawrence and others; objecting to their and all other theories, he substitutes his own, which in substance is the following:

All the human family sprung from Adam through Noah. The sons of Noah had different destinies, and required to be specifically distinct to accomplish them. "God could modify by his word as well as create." Hence the constitutions of the descendants of Noah were so changed as to be converted into four distinct species. 1st. The Shemitic, 2d. Japhetic, 3d. Ishmaelitic, 4th. Canaanitic, each containing several varieties. All these peculiarities were stamped on these species at one and the same time. Thus God, by a sudden transformation, made four species in one locality, all the species having impressed on them an adaptation to the climates of the different quarters of the globe, to which they were severally to remove.

As far as he traces up all the races of men to one original stock, we agree with him. His notions, however, of converting one species into four, by a miracle, are opposed to the plans of the Creator, in the other departments of nature. Nor would this miraculous conversion cover the whole

* An investigation of the Theories of the Nat. His. of Man, by Wm. Fred Van Arminge, New York, 1848.

ground, as there are so many races differing more widely from each other than his Japhetic and Ishmaelitic species, that additional miracles would have become necessary to transform some others of the descendants of Noah's family into new species, to supply the demands of other quarters of the earth.

He finds no difficulty in accounting for the migration of man to every quarter of the globe, and here also we coincide with his views.

If, however, the Deity impressed on the human constitution that organization which would capacitate him to produce these varieties in the several climates of which he should afterwards become an inhabitant, there would be no necessity for these incessant miracles. Besides, these new species, created in one country for the climate of another distant country, on their arrival in their new location, immediately began to produce varieties even more striking than his four original species, and these were the effects of natural causes—whilst his required a miracle of a character differing from the works of the Creator, in the formation of other species.

This is somewhat in accordance with another idea that has been advanced in some of our works on natural history, that a variety after having become permanent must be regarded as a true species. If these views were correct, we would be obliged materially to change those characters by which species are at present designated, and it might require not only a new nomenclature, but a congress of naturalists every quarter of a century to decide on those varieties which had then become sufficiently permanent to be admitted on the list of new species. If this idea were to find favour, Voltaire's notion of making a true species of an Albino would prove an original and valuable discovery. Nor

could we be restricted to one species of Albino man, since every one of its races have produced Albinos. Whilst we admit there is a difficulty in tracing all the varieties of some of our domesticated animals, the dog for instance to one original species, yet we conceive this difficulty would be infinitely increased were we to undertake to separate the races into those different species which are designated by their ever varying forms.

We regard the present arrangement of naturalists in reference to this point as the best that can be adopted. 1st. All domesticated animals in which these phenomena principally occur, that by their organization and the production of prolific offspring with each other, afford evidence of their common origin are regarded as species. 2d. All sprung from these that have deviated from the original forms transmit these peculiarities to their posterity and have become races, are called permanent varieties. 3d. Accidental varieties whose peculiarities are not transmissible and do not form races, are merely designated as varieties. These notions, however, in regard to the manufacturing of one or more true species out of another are so confused and impracticable, and moreover savour so much of La Mark's theory of progression, that they do not seem to require any farther notice in this place.

CHAPTER XVII.

THE QUESTION DISCUSSED WHETHER THE SAME SPECIES IS CREATED IN DIFFERENT LOCALITIES.—THE VIEWS OF PROFESSOR AGASSIZ.—THE CONSTITUTION OF MAN CAN BECOME NATURALIZED TO EVERY CLIMATE, AND HE IS EMINENTLY QUALIFIED FOR MIGRATION.—THE PARENTAGE OF THE AMERICAN ABORIGINES.

Another idea has been suggested by some naturalists, that although they admit all the human races to compose only one species, yet that the several branches of this species were created in the localities where they are at present found. Thus the species was created in Southern Africa, forming a tropical race—the same species was again created in Western Asia, forming the white or Caucasian race—the same species at the Poles, forming a Polar race—the same species on the Papuan Islands—the same species in America, etc., thus making man only a single species, but assigning to him different centres of creation. Although not of one blood, they suppose that all these varieties of man are composed of only one species. Their arguments are drawn from analogy in regard to the creation of the lower species of animals in particular localities, who are restricted to certain zoological regions: whilst some of these species they inform us are found on widely separated localities, and afford evidence that the same species had its centres of creation in different portions of the earth. The latter views we will discuss presently, and will now proceed to consider the former.

At a meeting of the Academie des Sciences Naturelles, in Paris, at which we happened to be present, some of the

Naturalists, admitting that from the characteristics that were found in all the varieties of men, it was impossible to separate them into distinct species, from the slight differences that existed among closely allied tribes; hence they regarded man as everywhere the same species, but created in different localities. These notions were opposed by the powerful arguments of some of the members, and by the ridicule of others. Dr. Lawrence,* who advocated the doctrine of the unity of the races makes the following remarks in reference to this subject: "We have no data for determining this point. It could only indeed be settled by a knowledge of facts which have long ago been involved in the impenetrable darkness of antiquity." From the general tenor of the cautious remarks that have fallen from Dr. Morton, we have sometimes supposed that he might entertain some such views in regard to the races of men. We confess we are anxious to understand his views, and are unwilling to misrepresent them. His general writings are characterized by great plainness and simplicity, but we must acknowledge that we are not fully able to comprehend his exact position in a paragraph which he repeats in nearly all his writings in reference to this subject. "Thus I conceive that there are several centres for the American group of races, etc. Nor does this view conflict with the general principle, that all these nations and tribes have had a common origin, inasmuch as by this term is only meant an indigenous relation to the country they inhabit, and that collective identity of physical traits, mental and moral endowments, language, &c. which characterize all the American races. The same remarks are applicable to all the other human races. I may here observe that whenever I have ventured an opinion on the question, it has been in favour

*Lectures on Physiology and Zoology, p. 442.

of the doctrine of primeval diversities among men—an original adaptation of the several races to those varied circumstances of climate and locality, which while congenial to the one are destructive to the other.”* He adopts Blumenbach’s arrangement in his *Crania Americana* for the reason that he had nothing new to offer on the subject, substituting however the vague term race for that of variety, and heads his excellent introductory essay with the words, “varieties of the human species.” In his “inquiry into the distinctive characteristics of the aboriginal race of America,”† he says, “the organic characters of the people themselves prove them to belong to one and the same race and that this race is distinct from all others.” This seems to imply either a belief in the plurality of species; or a plural creation of the same species in different localities. He afterwards remarks that this is not incompatible with the history of man, as recorded in the Scriptures, and finally speaks of the “primitive dispersion of the species.” If we could fully comprehend his meaning, we would frame our arguments accordingly. We would be most happy to quote him as authority in favour of our theory; if otherwise we should feel it a duty, however reluctantly, to meet him as an open opponent. To our mind he now occupies a questionable, and to us, very unsatisfactory position; he so arranges his materials as to do our cause the greatest amount of injury, whilst at the same time his language is so mystical and transcendental that we scarcely feel warranted in attacking him as an opponent.

Our friend, Professor Agassiz,‡ one of the most eminent among living naturalists, and who in the department of fishes, mollusks and radiates, has never had an equal, is

* Morton’s catalogue of skulls—introduction, p. 9.

† Page 137.

‡ Principles of Zoology, p. 179.

of the opinion that in regard to many of the lower species of animals, "they must have been created at several points of the same zone," and instances a fish vulgarly called the pickerel, "found both in the waters of the Hudson and Delaware, which could only have effected such a migration by passing along the sea shore, or by leaping over large spaces of terra firma; that is to say in both cases it would be necessary to do violence to its organization." He moreover clearly makes man an exception to this supposed creation of the same species in several points of the same zone. In his admirable paper on the geographical distribution of animals he uses the following plain and unmistakeable language:—

*Il existe donc une difference réelle entre les peuplades des divers Continents, et la coincidence remarquable que nous venons de signaler entre leur répartition primitive et la circonscription des faunes dans les mêmes Continents, nous dit assez que leur diversité remonte à la même cause primordiale. Mais cette diversité, qui a la même origine, a-t-elle la même signification chez l'homme que chez les animaux? Evidemment non. Et ici se révèle de nouveau la superiorité du genre humain, et son independance plus grande dans la nature. Tandis que les animaux sont d'espèces distinctes dans les différentes provinces zoologiques, auxquelles elles appartiennent, l'homme malgré la diversité de ses races, constitue une seule et même espèce sur toute la surface du globe. A cet égard, comme à tant d'autres, l'homme nous apparaît comme un être exceptionnel dans cette création, dont il est à la fois le but et le terme.†

*"Notice sur la géographie des animaux, par L. Agassiz. Extrait de la Revue Suisse. Neuchâtel. 1845."

†"There exists then a real difference between the inhabitants of the different Continents, and the remarkable coincidence which we have just pointed out between their primitive allocation, and the limitation of the fauna in these

Although we agree with him in his opinions on the distribution of animals in the different Zoological regions, and also in the views so emphatically expressed, that "man constitutes one only, and the same species on the whole surface of the globe;" we do not, however, coincide in his views that man forms an exception to this law, unless he refers to man's moral and intellectual nature : in a physical point of view, there are in every department of nature the same exceptions to this law that are found in the case of man, although their geographical ranges are in most instances, not quite so extensive. The wolf, beaver and ermine, among quadrupeds,—the wandering petrel, the golden eagle, and others among birds, the right whale, (*Balæna mysticetus*,) among mammalian fishes, the salmon, (*Salmo salar*,) among the true fishes, and a few others might be quoted as examples, and admitting human agencies we might include among the mammalians, the rat and the mouse, and all domesticated animals, the house-fly and other insects, as well as many phænogamous and immense numbers of cryptogamous plants. These, endowed with constitutions capable of naturalization, and with powers of migration, inhabit considerable portions of the globe, and yet it would be unphilosophical to suppose that they were separately created in different localities.

same Continents shows us clearly enough that their diversity ascends to the same primordial cause. But has this diversity the same origin; has it the same signification with man as with (the inferior) animals? Evidently not. And here is again revealed, the superiority of the human race and its greater independence in nature. Whilst (the lower) animals are of distinct species in the different zoological provinces to which they belong; man, notwithstanding the diversity of his races, constitutes one only, and the same species over all the surface of the globe. In this respect as well as in so many others, man seems to us to form an exception to the general rule in this creation, of which he is at the same time the object and the end."—*An account of the geographical distribution of animals*, by L. Agassiz; Extracted from the Swiss Review. Neufchatel.

In regard to the views of those who, differing from Prof. Agassiz and ourselves in this particular, and who consider the races of men as having had several origins, the following difficulties in the way of their theory appear to us, as insurmountable.

1. They are opposed to our experience in the operation of those laws which the framer of the universe has observed in every department of his creation.

The act of creation was a display of miraculous power; God has never multiplied miracles when the same effect could be produced by second causes. If he, therefore, created a species in one place, which was endowed with intelligence above all the rest of his creation, and which, by its organization could produce varieties adapted to every climate, and was amply furnished with the means of extensive migration, where, we ask, was the necessity of creating the same species in those different localities which their posterity might so easily reach without these additional creations?

2nd. There is a very great objection to this idea of a plural creation of the same species of man in different portions of the world, from the fact that the term species would have to be received in a very different acceptation from what it is at present, and would confound all the rules by which naturalists are at present governed. If according to their views, the Polar race was created in the Arctic circle, a doctrine which it is difficult to reconcile either with nature or probability, and the African race in Africa, and these races had originally the characteristics which they at present exhibit, they might with a greater show of truth, set them down at once as composed of different species. The creation of a species in one locality and the creation of the same species as a very distinct va-

riety of a different colour in another locality, is opposed to all the other operations in nature, and is besides far-fetched, visionary and most unscientific if it does not evidence a want of that candour which should always characterize those investigations in which men ought fearlessly to search for truth, regardless of consequences. They first direct all their arguments against the unity of the species, and then artfully endeavour to screen themselves and their unphilosophical notions against opposition by admitting a doctrine on the one hand which they are laboring to destroy with the other.

3rd. They are opposed to all our experience in another important particular, and in this we disagree with Prof. Agassiz. The same species of animal as far as our knowledge extends, is not created in separate localities. We know this to be the fact in regard to the mammalians and birds, and if in the fishes, the insects and plants, there appear to be exceptions to this rule, they may be accounted for on natural principles without a resort to miraculous creations. The animals on the Eastern continent are all different species from those in America, except those that in summer advance to the Arctic regions, and can from thence on their return in autumn, easily migrate to the temperate climates of either continent. All our quadrupeds, birds, reptiles, and even our plants in the temperate regions of America, are found to differ from those in every other part of the world. The fauna of Europe, so much resembles our own in its genera, that the American traveller feels in that country as if he was among neighbours, but not quite in his own family, inasmuch as the species although nearly allied all differ, with the exception of those that have been transported and become naturalized. Of birds, we are at present

acquainted with 520 species that exist in America north of the Tropic of Cancer. Of these, twenty-six land birds and seventy-six water birds, are identical with those of Europe. The land birds here enumerated, resort to the Polar regions in summer to engage in the duties and pleasures of rearing their young, and in autumn find their way to the temperate regions of both continents. A few of the water birds, such as the wandering shear-water, (*Puffinus anglorum*), and the petrels, (*Thlipsisidroma Leachii* et *T. Wilsonii*), possess such powers of flight, that they cross the Atlantic in any latitude. The geese, ducks, gulls, terns, common gannet, etc., proceed far north during summer, and by their aquatic habits and great powers of flight, migrate southerly along the shores of the Atlantic, both in Northern Europe and America. Of the remaining 418 species, they are restricted within certain latitudes in America, and are found in no other country.

We have within the parallels of latitude referred to above, in North America, 207 species of quadrupeds. Of these only eight, all which are polar animals, are found in the North of Europe, or the adjoining continent of Asia,—these are the polar bear, arctic fox, the wolverine, the ermine, pine martin, wolf, beaver and polar hare. The remainder are restricted to certain geographical ranges, and are found nowhere else.

Among fishes found in fresh water rivers that have no communication with each other except by sea, there are very few that are identical; many of these species have not been carefully compared. Where the same species is found to exist, the localities are not far removed, hence their existence in these separate streams may be reasonably accounted for. Many fishes are constitutionally organized to enable them to inhabit the rivers and the sea at different

periods of the year,—others have been conveyed from the sea and naturalized in fresh water. We may therefore not unreasonably suppose, that when driven to the ocean by a flood, or by an accident, fishes may wander along the shore where the water is less salt than at sea, and find their way instinctively up the first neighbouring river. The spawn or eggs of fishes, crabs, etc. constitutes a portion of the food of an immense number of species of water birds, ducks, herons, and various species of curlews, plovers, and sand-pipers; these eggs are very tenacious of vitality, and we have ascertained by personal observations on birds that we kept in confinement, that in many instances they pass through the body of the bird and are sometimes disgorged before these impregnated eggs become decomposed. In this manner also the grains and seeds of grasses also pass through the bodies of our domesticated animals in an undigested state, hence the many weeds and grasses that spring up on our manured lands. The botanist residing in the vicinity of Charleston who wishes to study the grasses of the northern and middle States, may find them on the farms on Charleston neck, where they have been disseminated by the aid of the manure brought from the city where our horses are fed on northern hay. We observed that the blue grass (*Poa pretensis*,) so successfully cultivated in Kentucky, abounded on the road sides on the Virginia mountains, along which the droves of Kentucky cattle had been driven. In the East Indies from the statements of Mr. Jessie and Colonel Sykes, the tanks and ditches that have become dry and perfectly hard retain the eggs of the fishes deposited on the previous summer, which produce young fish as soon as the first rains on the following season set in. Mr. Jacobi, of Berlin, ascertained by many experiments that when the spawn of both sexes was

extracted from fishes that had been dead for several days, the roe and the milt when placed together in the water by this artificial fecundation produced young fishes.* In an experiment we instituted in early life, to test the possibility of stocking the waters of distant parts of the country with the fishes that existed in other parts, we obtained the spawn from the bed in which it had been deposited of the common American yellow perch, (*Perca flavescens*,)—after having become dried in the shade for ten days, these eggs were again placed in the water, and more than half of them were ascertained to have retained their vitality, by producing young perch. It is therefore not beyond the reach of probability that fishes as well as crabs, crayfish, and other crustaceans of one country might be introduced into another by means of the spawn. By the artificial aid therefore of these several species of water birds, all of which, with the exception of the herons, fly at the rate of a mile in a minute, making 300 miles in five hours, the spawn of fishes may be easily conveyed from the head waters of one stream to another. Where however these rivers are very remote from each other, or where seas intervene, we may look in vain for a similarity in species. The newly formed ponds in Carolina, far removed from any communication with other waters, soon obtain some of the fishes and crayfish of the neighboring ponds. The former can easily migrate, but in regard to the latter, it is more reasonable to suppose that their supplies were received in the manner above stated, than that they should be annually created in each particular pond by a miracle.

We formerly doubted the truth of the many published accounts of the fall of small fishes from the clouds after

* Walker's Nat. Hist. of the Salmon. Transactions of the Highland Society.
—See also Yarrell's Hist. of Fishes, Vol. 1st. p. 24.

storms and heavy rains. We however, in company with Mr. Poinsett witnessed a phenomenon of this kind which neither of us could account for on any other principles than that these fishes had fallen with the torrent of rain accompanied by a thunder gust, that had just occurred.

Nor should another series of phenomena be overlooked. Our earth has from time to time undergone great geological changes by upheavals, &c. producing inundations, altering the courses of rivers and lakes, and fishes on the slightest opportunity wander from one stream to another. We were informed by residents in the vicinity, that there were no eels in Lake Erie previous to the opening of the great Western Canal, they having been checked in their upward progress by the Falls of Niagara, at the foot of which we observed them by millions, vainly struggling to ascend the cataract. At present the fishes of the Hudson have found their way through the artificial opening of the Canal to Lake Erie, whilst many from the Upper Lakes are now taken in the Hudson River. Thus, as long as nature presented an insuperable barrier, the species were not found identical in the different waters, but when these barriers were removed, they interchanged their several places of residence. The various strata of the earth, exhibiting the remains of extinct animals, have left us the most indubitable evidences, that they were from time to time, exterminated by mighty floods. An event of this kind, although it might have continued but a short period before the waters subsided, would destroy the races of quadrupeds and land birds, but would only disperse the fishes to more distant localities.

The seeds of plants, as every one knows, are conveyed and dispersed by birds, by water currents and by winds. Linnæus supposed that the seeds of some plants, such as the

flea-bane, (*Erigeron canadense*,) etc. might be easily carried in the clouds across the Atlantic. The minute and almost invisible seeds of the Algæ, Felices, musci and other cryptogamous plants, as well as the infusoria, are floating in the atmosphere, and may thus be transported over wide oceans, and some of them are supposed by Humboldt, Ehrenberg and others, to increase and multiply whilst they are passing on in the clouds. Rust in wheat, (*Puccinia graminis*,) smut, (*Uredo segetum*,) infesting the cereal grains and grasses.—The puff balls, (*Lycoperdon*,) the common mushroom, (*Ugaricus campestris*,) are carried through the air by a continuous wind and dispersed over the world. We observed in the invaluable Herbarium of our friend, Sir William Hooker, an immense number of cryptogams that were identical in both continents, and for aught we can conceive to the contrary, may be as great cosmopolites as man himself. But all plants containing heavy seeds, that can neither be conveyed by winds, or carried by birds across the Atlantic, are found to be of different species on the two continents. We are acquainted with forty-two species of oak (*Quercus*,) East of the Rocky Mountains, fifteen others belong to Mexico,—there are twenty-eight species in Europe,—not one of these exists in both continents. We have three species of walnut, (*Juglans*,) Europe has one. We have eleven species of hickory, (*Carya*,) none are found in Europe. We have three species of chestnut Europe has one. Each continent has a sycamore, (*Platanus*,) In all these and hundreds of others, which we could mention, including every tree that is a native of the Southern States, we have not a single species that is at the same time a native of Europe, or of any other part of the world.

As we are anxious that this point should be fully understood, we could, if we were not fearful of tasking too much

the patience of our readers, give such a body of facts as we think would show conclusively that every species of animal or plant, has its central birth-place from which it spreads and becomes diffused to certain limits, where it ceases to exist, unless it is removed to other localities, by artificial means ; in a word, that every species obeys the laws of its constitutional organization—some being restricted within narrow geographical bounds—others, as in some birds, possessing great powers of flight, are found nearly all over the globe—some animals, like the ermine, the wolf, and the beaver, are adapted by their organization for extensive migration : and finally, man with his superior organization, and the possession of the highest intelligence of all the creatures of earth, is constitutionally organized to enable him to remove to every part of the world, and find a home in every country. Hence we learn the important fact that the Creator never called into existence the same species in two or more localities.

But, as we are convinced, as we have already stated, that from all the rules that govern us in science, the varieties of men cannot be regarded as different species, and that our opponents have no other rallying point than the one now assumed, viz., that the same species of man has been created in different localities ; believing also, from the conversation of several whom we have recently met, that they will fly to this last retreat, and that here they are prepared to fight their last battle, we will endeavor by depriving them of their weapons to show that it would be folly for them to hold out in an entrenchment so insecure and untenable, and that it would be most prudent for them to surrender, at least this point, and then we may again harmoniously pursue the paths of science together, and be instructed by the wise and uniform teachings of nature.

We are well aware that they may hunt up in books of science an account of two species of plants, insects, crustacæ, or fishes, that exist in different localities; and from hence they may argue that examples may be found in other departments of nature to warrant them in adopting this new theory, of the plural creation of man in various points of the globe.

Whilst we would not fear to meet an investigation even in the lowest forms, yet the difficulties that lie in the way of a satisfactory decision are so self-evident, that it must be admitted it would be more reasonable and satisfactory to confine our investigations to those higher orders in which mistakes are less likely to occur.

The native plants of America are all of different species from those of Europe, until we arrive at the far North, where the two continents nearly approach each other. That these two continents were formerly united is highly probable—even now, Behring's Straits, which separates them, is but forty miles wide. For the identity, therefore, in these species, we can reasonably account. In all our agricultural regions the seeds of foreign plants are annually introduced. The majority of our garden seeds are even to this day imported from England and Scotland; with these are mixed up the minute seeds of foreign weeds and grasses. These, in an incredibly short period of time, spread far and wide over our country. By this mode several hundred of foreign species of plants have been introduced and naturalized in America. Col. Fremont found the Timothy or herds grass, (*Phleum pratense*,) the white clover, (*Trifolium repens*,) and several other plants, natives of Europe, and subsequently introduced into our Atlantic States, already flourishing in the valleys of the Rocky Mountains. The soft grass, or muskeet grass, as it is called

in the South, (*Holcus lanatus*,) a native of every part of Europe, was originally introduced into the Middle States, and now covers all the prairies of the West and is found in California. The troublesome May weed, (*Anthemis cotuli*,) the pig weed, (*Chenopodium album*,) the Jerusalem oak, (*C. anthelminticum*,) &c., have already found their way to Oregon.

The most satisfactory mode of deciding this question, not only in regard to plants, but to animals, would be to compare those of the Northern with those of the Southern hemisphere, and here we are not aware that there is a single species existing in both regions, except those of a very few species of birds, whose migrations extend over the globe. There are for instance, among forest trees, no less than one hundred and twenty-five species of true pines, described by botanists as existing on the Northern Hemisphere—we are acquainted with nine species that are not in the above list, which would swell the number to one hundred and thirty-four—admitting that a few of these are only varieties, we would still have upwards of one hundred and twenty species of pines—not one of these, or indeed not a single pine of any description is found to the South of the tropics in any country.

So also in regard to insects. Many of them are migratory in their habits, and by the aid of their wings are enabled to find their way over extensive regions of country. Some of those that appear to us by their apparently clumsy and heavy structure and helplessness, to be incapable of flight, are nocturnal in their habits, and fly admirably by night. The cotton caterpillar is an instance. This much dreaded lepidoptera, is a native of the Southern and hottest portions of East Florida, from whence it was sent to us by the deceased Dr. Leitner, who had obtained it from the wild

tropical cotton tree growing in that country. At long and irregular intervals, favoured by heat and moisture, and a succession of South-westerly winds, it commences its migrations toward the North and East, and by a rapid succession of breeds, extends itself over the States of Florida, Mississippi, Alabama, Georgia, and South Carolina. We will not tax the credulity of our readers by inquiring how many pairs of these caterpillars left the woods of Florida at any one season to people all these worlds of Cotton plantations. It will be more interesting for them to know that not even the nucleus of a single one survives to recommence its round of mischief on the following year. We have on several occasions preserved this insect in its fly, chrysalis larva, and egg state, and all invariably perished on the first cold change, even when the thermometer was at 34°, and therefore, above the freezing point. The labours, therefore, of the planters in burning up their cotton stalks and weeds in autumn, to save them from another visit of their insidious foes, is superfluous—nature will do the work for them. But as we are not writing on agricultural subjects, we have only cited this instance to show how rapidly these seemingly insignificant insects multiply, and how wide is the extent of migration in these apparently inactive and helpless creatures. Yet men might argue from the fact, that because this nocturnal moth cannot, during the day-time be made to fly ten yards, the same species must have been separately created at least in the various States, if not on the various plantations of the South. When our early navigators first visited the distant and previously unknown islands and continents, all the foreign insects and animals that usually accompany man in his migrations were unknown in those countries, but the very next vessel that succeeded, found that they were already

naturalized. The house-fly, the flea, and the cockroach, (*Blatta*,) together with the rat and the mouse, those pests of ships, had been left there by their predecessors. At the quarantine ground on Staten Island, we observed no less than nine species of the annoying musquito, (*Simuliites*,) the several natives of South America, Mexico, the West Indies, Louisiana and Carolina. The vessels lying at quarantine from various ports indicated their mode of immigration. We recollect on one occasion having seen several species of well-known European butterflies and moths in the middle of the Atlantic, flying around the ship in which we were sailing; on the decks of the vessel were also seen several species of coleopterous bugs, (*Calandr. curculio*, etc.;) we were for some time at a loss to account for this strange phenomenon, until we recollected that we had sailed from a European port in a high Northern latitude, late in autumn,—that the insects either in the egg or chrysalid state had been packed up among the goods, the grains and vegetables composing the cargo. We had now although in the winter season arrived on the borders of the tropics. The warm weather urged these insects into life, they crawled out from every part of the cargo and swarmed around the ship. In this manner, maritime nations are constantly interchanging their insects, and by this mode we have imported several species that are injurious to our orange and fig trees, as well as to our grains, fruits, apples, pears, etc.

We have already referred to the mode by which the eggs of fishes, crabs, salamandras, &c., may be transported. It is quite evident, therefore, that in the examination of these lower forms of animals, much perplexity may arise in regard to the native localities of the different species. Not so, however, with birds and quadrupeds. These are with

great difficulty introduced. Our American partridge, after a series of importations from this country is now naturalized in England. The wild pigeon after the importation of thousands from America, although producing young in the aviary of the Earl of Derby, does not yet breed in the English forests. Others of our birds that have strayed or been carried thither have not as yet become naturalized, or exist there in a wild state. In America we have not, thus far, succeeded in introducing the English or French partridge, the pheasant, the grouse, or any of the game birds of Europe. We have understood that after some hundreds of European sky-larks, (*Alauda arvensis*,) were let loose near New York, they now are found breeding in a few localities.

The history of the habits of some of our species of birds to which many superstitious notions were attached, are now better understood than heretofore ; and hence the difficulties that were formerly presented in regard to the same species of bird existing in widely removed localities, have now vanished. Our little sora rail, (*Rallus Carolinensis*,) is known to breed at Hudson's Bay and around the upper lakes in the far North and West, and to exist during our winter seasons at Yucatan and other places within the tropics. Suddenly and without previous notice their cacklings are heard in the month of September in all the marshes around the reedy shores of the Delaware and Chesapeake. When started from the marshes they fly feebly and awkwardly, hang down their legs and drop among the reeds and rushes not twenty yards off. Hence as they appeared unable to fly to any distance men began to speculate on the cause of their sudden appearance, and their equally sudden removal. That they were born in all these localities was originally the general supposition. Some pretended to have found them under the ice and in

ditches during winter in a dormant state, and the less enlightened assigned their reasons for believing that they had their origin from a frog, which having once been a tad-pole, had first lost its fish-like tail and became converted into a frog, from whence by an easy transition it was transformed into an aquatic bird. It has now been ascertained that it is a nocturnal bird and flies admirably by night, the period in which its agility is displayed. It breeds in the Northern and North-Western regions—rests for a few weeks along the inviting marshes of the middle States, where it feeds on the seeds of a species of reed; visits Carolina by millions on its progress to the South, and possesses the capacity of flying 500 miles in a single night. The swallows were once supposed to congregate together in autumn and resort to the bottom of a lake or river to enjoy a comfortable winter's sleep, where it was asserted they had been drawn out by the nets of the fishermen, and were found clinging together like onions on a string. On this point a person at the South may easily be satisfied by the evidence of his senses. Six of the species pass over the City of Charleston by hundreds of thousands in their semi-annual migrations. In our boyhood we endeavoured to ascertain the truth of these strange assertions. We procured living birds, which, after having been plunged under water for a few minutes we found were quite dead, and no warmth or electricity could resuscitate them. We are thus able to account for the wide dispersion of some species of birds that were formerly considered incapable of migration.

Of the wild quadrupeds existing in either country, we know of not one that has been successfully naturalized on either side of the Atlantic. Fishes may be easily introduced, and would without difficulty become naturalized.

In this manner the gold-fish already referred to, as well as the European carp, (*Cyprinus carpio*), have already been added to our fishes. We may, however, look in vain on the two continents for the same species of reptiles including the terrapins, alligators, snakes, lizzards, frogs, toads, etc. In consulting the admirable work of our friend, Prof. Holbrook on Herpetology, one of the best of the kind in any country, we will discover that he has not given a single species that is found in any other country; and as a proof that he coincides with us in our views in regard to the same species not being created in different localities, we refer the reader to his valuable and satisfactory remarks on the geographical distribution of the soft-shelled turtle, (*Trionyx ferox*.)^{*} The article displays not only a minute geographical knowledge, but judicious and accurate views of the teachings of nature in regard to the distribution of animals. This species is incapable from its organization of travelling over land. It is found in the Mississippi, nearly up to the Rocky Mountains, and in all the Northern lakes where a communication by water exists, and also in the Mohawk and Hudson rivers, but from thence to the Savannah river, for a distance of 800 miles it is not found, because these waters have no connexion with any stream in which it exists. On the other hand, the snapping-turtle, (*Chelonura serpentina*.) abounds in all the rivers, streams and ponds, from Maine to Georgia, and from the Atlantic up the Yellow Stone and Missouri rivers nearly to the foot of the Rocky Mountains, because it possesses the power of travelling by land, as well as of swimming.

Here then in the birds, quadrupeds, and reptiles, we possess the means of ascertaining whether a wise Creator has in any instance, called into being a solitary species

^{*}Holbrook's Herpetology, vol. 2nd, p. 15.

whose existence can be traced to a creation in different localities. If then a species inhabiting in the temperate climates of Europe or Asia should be described as existing also in America, we have reason to suppose that it has either not been sufficiently examined, or been introduced. In the days of Buffon nearly all our American species were supposed to be mere varieties of those of Europe—now, on closer investigation, they are admitted to be distinct.

In regard to the limitations of nature in the distribution of quadrupeds, we will give a few familiar instances. The opossum exists in all our Southern and Western States, and extends through Mexico to California; it abounds on the Western shores of the Hudson river, but has never been known to the East of that line, except where it has been carried over by human agency. Let us now look for the cause of this restriction. The Northern part of the State of New York is too cold for the residence of the opossum; it swims with great difficulty; it does not move out during the cold of a Northern winter, and cannot cross the river by swimming in summer; thus nature presents an impassable boundary. Here is an animal extending over the distance of 3000 miles, unable to swim or endure severe cold, and so inactive that a child can outrun it. Has it been created in two or more localities? We have not a shadow of evidence for this supposition. Our reasons on the contrary for the conviction that all are of one blood, are grounded on the fact that it is the same animal every where without even the slightest change,—that it has migrated as far as nature and its own organization would permit it, and stops at the very point where nature presents an impassable barrier.

The pouched rat of Georgia, (*Pseudostoma pinetorum*.)

sometimes but improperly called gofer, exists on the very banks of the Savannah river on the Georgia side, but is not found in Carolina, although a similar sandy soil and the same kind of food are there found for a hundred miles. It could not cross the Savannah river, and the Author of nature would not violate the order of his creation in calling into being the same species in another locality.

At the mouth of the Oregon river a pouched rat also exists. The Rocky Mountains presented an impassable barrier, hence the species that abounds there differs entirely from ours—not the same species created in another locality, but a new species, (*Pseudostoma Douglassii*.) Our common ground mole, (*Scalops aquaticus*,) exists from Canada to Louisiana and Florida. It cannot swim; it lies dormant in winter; its eyes are so small that it is generally represented as blind; it may be said to travel under ground; yet it is found in all parts of the country for the distance of more than 1500 miles. How has it found its way over this immense tract of country? There were no obstacles to prevent its progress, as it exists above the head waters of all the rivers. There are no intermediate spaces where it is not found, and it is every where the same animal; these are sufficient evidences to prove that it was not created in two localities. But a species exists in Oregon near the Columbia river; this species was described and figured by Dr., now Sir John, Richardson, as identical with our Atlantic species. How could it be found in both places with such a barrier as the ice bound Rocky Mountains lying between them? Here appeared an insurmountable difficulty in regard to our theory,—it was the only one that had ever been presented to us on this subject in so strong a light. We were, however, determined further to investigate this matter. After many dis-

appointments, we obtained through the aid of our friends, Mr. Nuttall and Dr. Townsend, several specimens of the ground or shew-mole from Oregon. The mystery was at once unravelled: the Western animal, besides being double the size of ours, has eight teeth more than our Atlantic species, and we accordingly described it as a new species, (*Scalops Townsendii*.) When we subsequently met our friend Sir John Richardson, in London, we compared the specimens. He expressed himself gratified to have it in his power to rectify an error, and an hour afterwards accompanied us to the Museum of the Zoological Society to re-label this and all his other species in which errors had been detected. When a species of ground mole was necessary to Oregon, which could not be reached by our common species, God did not violate the order of his creation by re-creating the same species there, but he gave a new species with a different organization.

Reasoning then, from analogy, we are led to conclude that since no species of quadruped, bird, or reptile, and we may add insect or plant, has been created in two or more localities, therefore we are not warranted in adopting the improbable idea that God would create the same species of man in five, ten or fifty localities, and thereby not only violate the order of creation, but even act contrary to the very laws of probability.*

4th. Another objection to this idea of the plural creation

* An interesting theological inquiry may here have suggested itself to some of our readers, which we have been strongly tempted to answer, and explain, but having entered on the consideration of this question, on purely scientific grounds, we are admonished not to suffer ourselves to be diverted from our first position; we must, therefore, refer our readers to the writings of several eminent and orthodox divines, who have given full elucidations on this intricate subject, showing that the Bible, faithfully and honestly interpreted, will be found in unison with the teachings of nature. As long as true science pays homage to the Creator, Christianity is secure. They may advantageously consult Bishop Stillingfleet, Matthew Poole, Origines Sacræ, book 3d, chap. 4th, p. 337. Scripture and Geology, Pye Smith, D.D., L. L. D., F. R. S.

of man in different localities, is derived from the nature of his organization.

By a law of his Creator he is pre-eminently endowed with a constitutional power to become naturalized in every climate—and this is the fact in regard to all the races. On the contrary, many animals with a limited geographical range perish when removed to other latitudes. The white bear, musk ox, arctic fox, and other anthromorphous tribes, pine away and die when removed to temperate climates. The Simiæ, natives of the tropics, become affected with a disease of the chest when removed to higher latitudes, seldom surviving beyond two years in America; such indeed, has been the waste of life among the various species in Europe, that both in the Zoological gardens of London and Paris, they have erected what are called monkey houses, where they have endeavored to preserve an equal temperature by artificial heat. In all the tropical regions of America there are tropical animals and birds, monkeys, parrots, humming birds, etc. When similar animals were created for the corresponding countries of Asia and Africa, there was not one of them that proved to be the same species with those in America. The deer and the foxes of America possessing no powers of extensive migration, are in no instance similar to the deer and foxes of Europe. On the other hand when the beaver was given both to Europe and America, ranging in the latter country from the North Pole down to California, he was found to possess the power of migration, both by land and water, and therefore God did not create a beaver for the Rhone and Garonne, and the rivers of France, as well as those of Sweden and Russia, and the same beaver for Canada, South Carolina, Georgia, Alabama, Missouri, and Oregon, for there is not even a shade of difference between them in any of these widely

separated localities. There is but one species of true beaver in the world, and it has no varieties, except occasionally an Albino. If our opponents insist that this same species has been created in these different localities, they are bound to afford us evidences of the fact, inasmuch as we have the evidence from his organization, from his capacity to endure the extremes of heat and cold, his existence in all the intermediate regions, and his similarity of form, colour, and habit, that there is but one species, which was not created in different regions.

Let us now direct our attention to the various races of men. The Mongolian, to which race the Chinese, Japanese, the Coreans, &c., belong, was celebrated in ancient days for his extensive migrations, and his predatory and warlike propensities. He spread far and wide the terror of his name under Atilla, Genghis, and Tamerlane. On the Eastern Continent he exists from the poles to within the tropics. In expressing our firm conviction that this same race exists in America from the farthest North to Cape Horn, on the Southern extreme of our continent, we are aware that we are opposing deservedly high authority.

The early writers on the history of the aboriginal races of America, were of the opinion that these people descended from the Mongols on the North of the Eastern Continent, and others that they originated from the Malays of the Indian Archipelago. The writings of Dr. Morton, however, and more especially his annual address delivered before the Boston Society of Natural History,* appear to have silenced at least for a time, the advocates of the old theory. His address is written with ability, and affords evidence of a close and persevering research. He had, moreover, op-

*An inquiry into the distinctive characteristics of the aboriginal race of America, by S. G. Morton, M. D., Boston, 1842, p. 7.

portunities of comparing “nearly four hundred crania derived from tribes inhabiting almost every region of both Americas.” He has arrived at the conclusion, 1st. That America could not have been people by the Mongolian race. 2. That none of these races could have derived their origin from the Malays. “That the American Indian from the Southern extremity of the Continent to the Northern limit of his range, is the same same exterior man; and 3dly, That there are no direct or obvious links between the people of the Old World and the New through all their endless ramifications of tribes and nations, they belong to one and the same race, and this race is distinct from all others.” The opinions of an intelligent naturalist, possessing so many materials to direct his judgment, are entitled to much weight on a subject with which he has long been familiar. We readily admit that in this he possesses superior claims on public confidence, and it would, therefore, appear presumptuous in us to express a contrary opinion. We regard this, however, as still an open question; and as all men are entitled to an honest expression of their views, so long as they are not injurious to public or private interests, we will proceed without entering into a discussion, which if fully treated would occupy a volume, to express the grounds of our conviction, that when this whole subject is more fully investigated it will yet be discovered that the original theory, which at present seems to have few advocates, will, notwithstanding the many erroneous speculations on which it was founded, prove to a considerable extent correct.

Nor do we express this opinion hastily or without due deliberation, founded on personal and minute examinations; opportunities have been afforded us of seeing many individuals in every Indian tribe that existed within the last forty years in all our Atlantic States from the Cana-

das to South Florida. We have never had an opportunity of seeing the Eskimaux, and possess no further knowledge of that race, than from the skulls and the many portraits with which the public is familiar; we have not visited Florida, and our only knowledge of those tribes is derived from an examination of the prisoners brought to Sullivan's Island during the late Florida war; but with all the intermediate Atlantic tribes we became acquainted, studied their forms, features and habits of life, and at one period attended their council house and spent three months in their villages. On the Eastern continent we possessed opportunities of examining several individuals, from all but one of the families regarded by Professor Morton, as belonging to the Mongolian race; viz., the Mongol Tartar, Turkish, Chinese, and Indo-Chinese families. We saw no individuals of the Polar family. Although we did not examine these races of men in regard to the question of the unity or plurality of their origin, we were anxious to render ourselves familiar with the different varieties. We became satisfied that the characters so confidently insisted on as "pervading all the ramifications of the great Mongolian stock. The small depressed and seemingly broken nose; the oblique position of the eye, which is drawn up at the external angle; the great width between the cheek bones, which are not only high but expanded laterally; the arched and linear eye-brows; and lastly the complexion, which is invariably some shade of yellow or olive, and almost equally distant from the fair tint of the European, and the red hue of the Indian,"* are far from being uniform or permanent in all the varieties of the Mongol family. In a crew of thirteen Chinese, which we examined at Liverpool, all represented to us by gentlemen

* Morton on the aboriginal race of America.

who had resided in China, as of unmixed blood, there were only three who possessed any claims to the oblique eye, so generally represented as a characteristic of this nation. Among a crew of Japanese which we examined in London, we sought in vain for the striking peculiarity spoken of by Thunberg, who says, "the eyelids form in the great angle of the eye a deep furrow, which makes the Japanese look as if they were sharp sighted," * An impression was left on our minds that several peculiarities ascribed as the invariable characteristics of the Mongolian were confined to the races existing in the Polar regions, and that the causes might yet be traced to the snow-clad regions which they inhabited. The colour was not as uniformly yellow as it has been represented, nor have we found that the red man of America is always entitled to the latter distinctive appellation. We saw a considerable number of individuals who belonged to several of the Mongolian families on the eastern continent, who, if we had met with them in America, we should immediately have classed with some of the tribes of our now dispersed and almost extinct aborigines. We observed the same high cheek-bones, the same very straight hair with scarcely a tendency to curl, the same beardless face, so very striking and peculiar in every branch of the Mongolian family—a few partial exceptions exist in both countries, but we observed at least, as much beard in two of the Japanese as we ever witnessed on the face of an American Indian. We could add many other resemblances in countenance, language and modes of life, but our only object in this place is to draw the attention of naturalists again to a subject which we believe when properly investigated, will once more direct the current of

* Malte-Brun, Vol. 2d, p. 537.

opinion into the original, but now apparently choked up channel.

From all the observations we were enabled to make we have been led to the firm conviction that the descendants of what is called the Mongolian race, are found in a variety of forms and shades of colour in America, from Greenland on the one side, and Kamtschatka on the other in the Arctic circle ; through the Russian settlements and Oregon, down to California in the West, and through the Canadas and the Atlantic United States on the East, down to the Southern point of Florida, on the very borders of the Tropics. That with occasional admixture of the Malays which appear to predominate in many tribes of California, Mexico and South America, and an admixture of the negro in some of the Florida and Cherokee tribes, the same race, with many variations, may be traced through the whole range of the American continent down to Patagonia and Terra del Fuego.

If then we admit that the constitution of the Mongolian adapts him to brave the extremes of polar cold and tropical heat, on the Eastern continent at least, and if it should by future observers be proved, that the American races exist through all the variations of climate from the extremes of either Pole, we might be led to enquire, where was the necessity of creating him in different latitudes, which he has already reached by natural migrations ?

The African, although having dwelt for unnumbered ages within the Tropics, where the thermometer reaches from 100 to 103 degrees in the shade—who braves the vertical sun and treads barefooted on the burning sands—has become constitutionally assimilated to the temperature of every State in our Union, and we are in-

formed that large settlements of this race now exist in Upper Canada.

Our Caucasians have become assimilated to every climate on the Globe. Three Russians lived seven years at Spitzbergen, between 77 and 78 degrees of North latitude; Parry, Franklin and Richardson, braved a worse than Siberian winter. The constitution of man enables him also to support every variety of atmospheric pressure. Humboldt ascended Chimboraco to the height of 19,300 feet. Col. Fremont and his companions ascended the highest peaks of the Rocky Mountains, 13,570* feet above the Gulf of Mexico, where there was no vegetation, and no other appearance of animal life than that of a solitary humble bee (*Bromus*.) The hamlet of Antisana, the highest known residence of man, is 13,500 feet above the level the sea. Here the atmospheric pressure is so small, that wild cattle when driven up to this elevation, are stated by Humboldt to bleed from the mouth and nose. The constitution of man also enables him to dwell within the tropics, and he daily crosses the burning line, without sustaining any injury to health.

If such then is the capacity of all the races to endure the extremes of heat and cold, where we ask is the necessity of performing new and unnecessary miracles in creating the same species in various localities?

We would here barely allude to another difficulty which has been suggested by those who advocate the doctrine of a plurality of races. They have advanced arguments to prove that the Eskimaux is constitutionally unable to endure the tropical heats. We answer that this is also the fact in regard to domesticated animals born in cold climates. Their descendants however, in a succession of generations, have become inured to these climates—every remove towards the South has prepared their constitutions

* Fremont's report, 1845, p. 71.

for the change. The same may be said of species removed from a warm to a cold climate. We believe we were the first that attempted to introduce what is called, the Muscovy duck into the Northern part of the State of New-York. These birds which we had received from the South were so sensitive to cold, being natives of Brazil, that several were frozen to death during the first winter, and the remainder were preserved in a warm room;—their successors however, after the third generation were constitutionally enabled to live in the poultry yard during the coldest winters. The red fox is possessed of a decidedly Northern constitution, being found within the arctic circle. About forty years ago his farthest Southern limit was Pennsylvania:—a wealthy gentleman residing on John's Island, near Charleston, a few years ago, imported from New-York a number of these foxes and turned them loose on the Island, where there was an abundance of food, and where they were left unmolested; the transition however was too sudden for their northern constitutions; they scarcely multiplied, and in a few years disappeared. In the mean time however, a more natural migration and acclimatisation was in progress,—the red fox made its appearance in the more elevated parts of Virginia,—there it multiplied so rapidly, that as we ascertained by personal observation two years ago, it has in certain localities become more common than the gray fox. The migrations towards the South continued with increasing and unaccountable rapidity,—it was soon after found in North Carolina, then in South Carolina, and we ascertained on a visit to Georgia last summer, that it was multiplying rapidly, not only in the higher but middle portions of Georgia, and that in a region ten miles from Augusta, it was more numerous than the gray fox. On one occasion whilst a hunter was calling for wild tur-

keys, two of this species of fox came up together and were killed at one discharge of his gun. As an evidence that it has lost none of its activity in consequence of its removal through successive generations from a nearly polar region to a warm climate, we were informed by Mr. Beale, a gentleman of character and a close observer, that during the winter of 1845, a number of gentlemen in the vicinity of Augusta, united their packs of fox hounds to the number of upwards of a hundred, many of these had been imported from England, to test the speed of this fox. They commenced the chase at two o'clock in the morning and pursued him on the open grounds until three o'clock in the afternoon. He being one of the party, tired down three horses,—after a run of thirteen hours the whole pack was broken down—the chase was abandoned and the fox proved the victor. The Virginian or gray fox, (*V. Virginianus*), a decidedly Southern species, existed forty years ago in the Southern counties of New-York, but was unknown in the Northern parts of the State. A few years afterwards it made its appearance in those colder portions of the State, and we have since obtained specimens of it, from both Upper and Lower Canada.

We perceive from hence in what manner many species of animals by a process in nature, become constitutionally adapted to endure both heat and cold.

In regard to the human species, if, as is admitted by Blumenbach, Cuvier, Dr. Morton, and nearly all other writers on this subject, the Polar family is a part of the Mongolian race, why is it that those branches residing near or within the tropics have not perished?

And here another question arises,—have they originated within the Poles, and from thence removed toward the Tropics; or have they not rather originated near the Trop-

ics, and removed toward the Poles? There are almost insuperable objections arising from the physical structure of man to the idea that he could have been originally created in the polar regions. His artificial wants—his natural nakedness—the necessity of warm clothing, adapted to those inhospitable arctic winters, would indicate that he originated farther to the South, and carried with him in his onward progress toward the Poles that knowledge and experience which necessity had taught him was requisite to enable him to brave the severity of those icy regions.

We contend then that if man is of one species, he must have been derived from one common centre of creation, and is, therefore, of one blood.

And here will be the place to offer a few remarks on the oft mooted question how could the varieties of men, if originating from one stock, find their way over trackless deserts and wide oceans? We will select, as an example, America, the most distant of these countries, and one which has most generally been referred to when these difficulties have been suggested. The migration of any race to these far removed regions, has been stated as impracticable, considering the want of skill and ignorance of the art of navigation, which they suppose characterized the early inhabitants of our globe.

That any of the races of men were originally barbarians cannot be proved; on the contrary, we have indubitable evidences that they were not only shepherds, but agriculturists and navigators. All the hieroglyphics on the monuments, even those of Mexico, afford evidences of their early civilization and knowledge.

We will here take the liberty of suggesting a few queries for the consideration of those who have so pertinaciously insisted that America could not by any possibility have

received its inhabitants from any other quarter of the world, and that a necessary consequence our aborigines were created on the soil they now inhabit. If the wild ducks and geese, and even the sparrows—if the Northern animals such as the white bear, the wolverine, polar hare, beaver, and arctic fox, have been enabled to find their way to our Continent—if the wolf has accomplished these migrations—if he has assumed different colours and forms adapted to the various circumstances and situations of his wandering life, if the ermine, our common weasel, an inhabitant of all the northern and temperate climates of Europe and Asia—which was found in America, at the farthest North, by Capt. Lyon, when his ship was imbedded in the ices of the polar sea,—if it is found in Canada and the whole of the United States, except on our Southern seaboard—if it exists in Oregon, California, and Mexico, in the West and South, and has thus become an inhabitant of a considerable portion of the world, with no other change except that of not becoming white in winter in warm climates, and therefore leaving not the slightest possibility of separating it into different species—if this small animal accomplished these migrations with feet an inch and an half in length, why may not man with his superior intelligence and his knowledge of the best modes of travel, as well as of navigating the waters by canoes and larger vessels, which he is known to have possessed from the earliest ages, have accomplished these migrations without the aid of a new miracle in creating him in various localities, which he might have reached by the simple exercise of those faculties and powers with which he was endowed by the Author of his existence ?

The Esquimaux of North America has by most writers been regarded as closely allied to the Kalmuc of Siberia,

and the North of Russia. In the portraits we possess of these people there is a striking similarity ; and we are not without evidence that these tribes are constantly crossing from one continent to another. The natives from the mouth of the Columbia river, along the coast of the Russian settlements to the farthest North, are represented as skilled in the use of canoes, and are almost aquatic in their habits. The character of the people of the closely adjoining continent of Asia, is similar. Where then exists the difficulty in accounting for the peopling of this portion of our continent from the adjoining coast of Asia, through the Aleutian Islands, which are bound together as so many links in a chain, until we reach the Russian settlements on the North West coast, and from thence through a succession of bays and inlets to the mouth of the Columbia River. We have on record many evidences of the fact that the North Pacific was navigated by Japanese tribes in the days of antiquity. Did we possess a series of good figures of the form and countenance of a number of individuals from both continents, our doubts in regard to their identity would we think be easily removed.

And where is the difficulty in accounting for the peopling of those middle portions of North and South America, by the Malays and other kindred races. Our charts point out to us three chains of Islands, nearly all of which contained inhabitants when first visited by European navigators ; one along the Equator, one along the Tropic of Cancer, and the other that of Capricorn. The Polynesian Islands evidently derived their inhabitants from the Malays and in turn sent them to the American Continent. We conversed with the Captain of a whaler who informed us that such was the nature of the current setting in from some of the Polynesian Islands toward the coast of America that

he had observed on the shores of the Gulf of California the wrecks of boats, portions of trees, and sea-weeds, that had drifted from the Polynesian Islands. It is then not difficult to account for the mode in which dissemination was accomplished in peopling the American Continent by the Malays through the islands of the Pacific, by the true Mongols on the North, and the Japanese on the North-West; surely, the migratory powers of reasoning and inventive man, ought not to be placed below those of the brute quadrupeds, the weasel and the wolf.

In proof that this was the mode by which the wise Creator intended the world to be peopled by giving man the power of migration both by land and water, and not by creating either a new, or the same, race on every continent and every island, we may remark that many large islands fitted for the support of thousands of our race, were found on their first discovery to be destitute of inhabitants; they were unconnected with any chains or groups of Islands, were far removed from the line of navigation, and hence had not yet been discovered by these unpractised navigators. Of these, the Falkland Islands, 120 miles in length, and 60 in breadth, afford a striking example; to this we may add, the Galapagos Archipelago, Juan Fernandez, Mauriturus, Pitcairn Island, the Isle of Bourbon, and St. Helena. Capt. Cook informs us of the evidences that were presented to him, of canoes of savages that had been driven to distant shores, and were never able to find their way back to their native homes. He found at Wateo three inhabitants of Otaheite who had been drifted thither in a canoe, to the distance of 550 miles. We have account of two canoes from Ancorsa, that in 1696, were thrown by contrary winds on one of the Philippine Islands at the distance of 800 miles. Capt. Kotzebue,* met

*Kotzebue's Voy., 1815.

a person at Kadre, who, with three other of his countrymen had been drifted from Ulea, an island 1,500 miles distant.* Capt. Beechey found persons on islands where they had been driven by the storm 600 miles from their homes. There are many other similar occurrences on record.† The spaces thus traversed by rude savages in canoes, were not greater, and their mode of conveyance not more difficult than might suffice to transport boats from various parts of the Eastern continent to the Western shores of America. It will be borne in mind, moreover, that these rude tribes of hunters and fishers, on all occasions except in war, are accompanied by their females. Were all the races of men by some awful convulsion suddenly cut off, leaving but one family, there can be no reason assigned why that family, possessed of reason, invention, and the powers of migration, should not, in the course of ages and centuries, overspread the whole earth.

An incidental argument in favour of the original peopling of the Polynesian Islands by the Malays, may be deduced from the fact, that not only the principal Islands were found inhabited by races that did not differ widely in form and colour from many tribes of the opposite continent, but that they were in possession of such domesticated animals as could be most easily transported, and were in general use for food. Thus Capt. Cook and all our early navigators, found, in the chain of Islands south of the Equinoctial line, in a direct range with the American Continent, the dog, the pig, and the common fowl; neither of them existed in a wild state on any of the islands, and all of them resembled species existing on the Malay Islands. The dog was of the common breed; the hog, although small, was a mere variety of the common hog, resembling

* Malte Brun's Geography, vol. 3, p. 419.

† Narrative of a voyage to the Pacific, 1825-8, p. 170.

the variety on the Malay Islands; it bore no relationship to the small wild hog of the Papuan Islands, (*Sus Papuensis*), and the fowl was of the common breed; its varieties were also there; among the rest, the frizzled fowl. The pig and the fowl had not yet reached the American continent, although they had advanced two thirds of the way as far as the Society Islands; thus no animal was transported that was not necessary to man's sustenance, or that could not be carried in a canoe.

'Another argument of a similar character may, perhaps, be derived from the fact that our Indian corn, (*Zea mays*), is supposed by some botanists to have existed on both continents before the discovery of America by the Europeans. We have as yet been unable to find any spot, either in North or South America, where it may be said to be indigenous. In every locality where it has been found, it had been planted by the Indian tribes, and was only preserved from extermination by artificial culture; Linnæus, Willdenow, Pursh, &c., regarded it as a native American production; on the other hand, Crawford and several other botanists, who travelled extensively in India, have expressed an opinion that it was a native of the warmer parts of Asia. Camer, (*Epit.* 186,) speaking of its nativity adds the words "Asiatieum, turticum et indieum." This invaluable grain, which, on account of our hot summers, thrives better in America than in other countries, if it did, as is supposed, exist on both continents before the discovery of America, must have been carried from one continent to the other, for we have not a shadow of evidence from the operations of nature in other departments, that it was originally created on both continents, and the seeds are so heavy that they could not have been transported by winds, and it could not by any possibility have been carried by

birds or conveyed by tides. May it not then have been introduced by the Malays? We merely offer this as a reasonable conjecture which has often been suggested to our mind, connected with an interesting inquiry in regard to the true origin of one of our most valuable grains. We think it quite improbable that our Indian corn could have been carried from America to Asia before the discovery of America, and therefore, if it has not been introduced into Asia since the days of Columbus, it must have been brought from the East by the first emigrants through the Polynesian or Aleutian Islands.

CHAPTER XVIII.

THE QUESTION CONSIDERED, WHETHER ALL THE INDIVIDUALS IN EACH SPECIES OF ANIMALS AND MAN, COULD HAVE BEEN DERIVED FROM SINGLE PAIRS.

Here also, we must be allowed briefly to allude to another subject connected with the inquiry that has occasioned much speculation and doubt. When the assertion is made that the whole human race has originally descended from one pair, the mind is startled at the vast idea. Limited as are our capacities—prone as we are, to judge only from things around us, and to imagine that multitudes must have derived their origin from multitudes, we are scarcely willing to sit down to the rules of arithmetical progression, and thus form an idea of the multiplication of the human species, from the facts that are presented in the rapid multiplication of plants and animals under our cultivation and subjection. A single coffee tree was sent from Amsterdam to Louis XIV. in 1714, from which have been derived all the coffee trees in the West Indies, and on the Continent of

America. From a few seeds of rice, cotton, indigo and tobacco, have proceeded all the invaluable staples of our Southern country. The *Morus multicaulis*, and the rose called the cloth of gold, originated each from a single seed, and from one plant—yet they have within a very few years, spread over the civilized world, although propagated not from seed, but by artificial means. Some years ago, the celebrated Vauban made a calculation of the probable production of the female of one of our common swine. He did not include in his calculation the male pigs, although they generally are as numerous as the females, in each litter; he allowed but six young to each, though they are usually more numerous; the result was, that the product of a single sow in eleven years, which are equivalent to ten generations, would be six millions four hundred and thirty-four thousand eight hundred and forty-eight; deducting thirty-four thousand eight hundred and thirty-eight for deaths, by casualties, &c., there would remain six millions of pigs, the number then in France. “Were we to extend our calculations,” says Vauban “to the twelfth generation, we should find as great a number to result, as all Europe would be capable of supporting; and were they to be continued to the sixteenth, as great a number would result as would be adequate to the abundant peopling of the globe.” Similar calculations may be made in regard to the pigeons, and poultry; but as these species multiply more rapidly than the human race, we will direct our further inquiries to animals that in this particular approach nearer to man. The introduction of the horse, the ox, sheep, etc., into America and the Islands of the Pacific, has been of comparatively recent origin. The early navigators, Cook, Vancouver, &c., introduced some of our breeds of domesticated cattle into the newly discovered islands

and continents. We observe it incidentally mentioned in the life of Douglass, the naturalist, that one or two pairs of common cattle had been introduced into the Sandwich Islands, where they had multiplied so rapidly in a few years, that they roamed over the mountains in countless herds, and that the inhabitants caught them in pits in order to furnish the shipping at Hawaii with beef, and supply themselves with food. Into one of these pits Douglass accidentally stumbled, and was gored to death by a bull that was already incarcerated there. It is but three centuries since the discovery of America; at that period there was not one of our domesticated animals, unless we make the dog an exception, in the whole land. The extraordinary herds of horses and wild cattle now existing in South America, all sprung from a few pairs let loose by the Spaniards.

D'Azara states that in his day there were 12 million cows and 3 million of horses in Buenos Ayres. Mons. Dupon's reckoned that 1,200,000 oxen and 180,000 horses and 90,000 mules wandered at large from the Orinoco to the Lake of Maracaybo. Columbus, in his second voyage to St. Domingo, introduced black cattle into that Island, and only 65 years after the capture of Mexico there were exported according to Acostas report, 35,444 hides from St. Domingo, and 64,350 from the ports of New Spain.

In the United States, whose existence as a nation is but of yesterday, how few of either species of our domesticated animals were originally introduced, and notwithstanding the annual slaughter of millions, how many millions still exist, to attest the power of rapid reproduction. The number slaughtered for food in a single year is ten thousand times greater than that of all the importations that have ever taken place. The last enumeration we have seen

of the horses existing in the United States amounts to five millions.

When we take these facts into consideration and a hundred others that are on record, we need not be surprised at the rapid multiplication of the human species. In the recent work of Fowler,* an estimate like that found in the notes of Sir William Blackstone, is made of the whole number that would be produced by a single pair of the human family in only fifty generations. His calculation is that it would amount to two thousand three hundred and sixty two billion, seven hundred and forty-nine thousand, nine hundred and fourteen million, two hundred and fourteen thousand and forty-six,—(2,362,749,914,214,046,) a multitude which no man can number, and no mind conceive. The whole number of inhabitants existing at present on the earth is estimated at no more than 800 million. When we extend the above calculation to the period assigned by the Mosaic chronology through several hundreds of generations, during the lapse of more than four thousand years, after making every deduction for the loss by wars, famine, pestilence and natural deaths, we will not be disposed to doubt the possibility of the derivation of all the individuals in the races of animals, and men from single pairs.

We were prepared to offer some arguments in favour of the unity of the human race, derived from the structure of languages, which seemed to our mind to afford evidences that were almost irresistible, but as these have been already fully advanced by men well versed in philology, and as this would moreover fill up many pages, we hesitate in consuming more space in discussing this branch of the subject, especially as we possess more satisfactory means in

* Fowler on hereditary descent.

enabling us to come to a decision on this question, than those of tracing up the words in the dialects of unlettered tribes to their original roots.

Nor do we conceive it necessary to do more than barely notice the hints that have recently been thrown out by our opponents that the works of Lepsius, now in the course of publication, may affect our generally received views of chronology. It will be the safest mode for all the parties to suspend their arguments, till the result of Lepsius' researches, are laid before the public. His field of labour has recently been travelled over by men of keen research and profound knowledge, and we will have opportunities of hearing the arguments on both sides. Besides it must be very evident that if it could even be proved from Champolion Bunsen or Lepsius, (which from all the lights we have thus far received, they are incapable of doing,) that the races of men existed ages prior to the period assigned by our present chronology, it would in no wise affect the doctrine of the unity of the human race. If man is proved to be composed of only one species, the age in which he originated will not (at least, as far as science is concerned) affect the validity of his claim. The unbeliever might in such a case urge it as an argument against the veracity of the Mosaic record, but surely the naturalist cannot make use of it in designating a species. He is governed by the characteristics in nature and not by historical traditions.

CHAPTER XIX.

REFLECTIONS ON THE TENDENCY OF THE DOCTRINE OF THE UNITY OF THE HUMAN RACE TO PRODUCE ENLARGED VIEWS OF THE POWER AND BENEVOLENCE OF THE CREATOR—ADDRESS TO THE READER—THE TEACHINGS OF NATURE IN ACCORDANCE WITH REVELATION.

We have now placed before our readers the outlines of our views on this intricate subject of inquiry. The true solution of this problem will no doubt in time be found. When this shall have been effected it will be seen, that like all other discoveries, the plans of the Great Creator were uniform, simple and wise, and that all the difficulties arose from the short-sightedness and imperfections of the human mind. It would however, in our conception, enlarge our views of the power and benevolence of the Deity and strengthen our sentiments of philanthropy and charity could we all be permitted to regard the Great Creator as having “made of one blood all nations of men for to dwell on the face of the earth.” Influenced by such exalted conceptions of the Deity, all the races of men, the bond and the free, in the various gradations of society, would be bound in closer bonds of brotherhood, and could with filial confidence worship together at the footstool of that Universal Parent of Mankind, who has given Immortality and offered Salvation to all men, of every grade, every colour and every nation, who obey his law, whether emanating from his inspired word, or written on the tables of the heart!

Reader ! we have travelled together over the pleasant but intricate and sometimes perplexing paths of science in our earnest and persevering efforts at interpreting the book of nature. To the Divine mind every thing is plain—every

thing moves on in the utmost simplicity and uniformity ; but owing the limited powers of man he hesitates and pauses at every step ; the pride of science gives way to a humiliating sense of his inferiority, and he calls for light to guide him through many dark and bewildering paths.

There is an ancient record, venerated on account of its antiquity of the pure morality it teaches, and the immortal life it proclaims, that professes to give us the origin and early history of our race ; although we have yielded in courtesy to the expressed wishes of our opponents, not to base any of our arguments on the teachings of that volume, yet we felt as if they could not claim this a right, inasmuch as they were constantly endeavouring to advance their cause, by dragging from the dust of antiquity every obscure and doubtful record, searching among rude and barbarous nations for ancient traditions, and striving to interpret in favour of their theory the hieroglyphics and sculptured heads on the mouldering monuments of antiquity, seizing upon every thing calculated to throw doubts on the chronological and historical veracity of the Scriptures, and even telegraphing to America through the convenient wires of Mr. Gliddon, the yet unpublished opinions of Lepsius. We are however, disposed to allow them these advantages, although our liberality is not duly reciprocated. They cannot therefore object to our alluding in the last pages of this essay, to a few remarkable coincidences between the teachings of nature and the revelations of Scripture on some of the greatest phenomena that have occurred in our world.

Revelation informs us that “ in the beginning God created the heavens and the earth, and the earth was without form and void ; and darkness was upon the face of the deep.”

The evidences of creation are all around us. The researches in geology have established the fact that there was a time when this earth was a chaotic mass, and when its surface and its waters were shrouded in darkness.

We have next an account of the successions in creation preparatory to calling into existence the last, the noblest, and most perfect of all the creatures of earth, who, by the possession of reason and an immortal mind, is linked to the higher intelligences around the throne of God.

When we dive into the bowels of the earth we discover in the successive creations preparations made for the multiplied wants of a being thus constituted. Beds of coal to serve as fuel so essential to his existence, and which he only is capable of converting into practical use, had for ages been gathering in vast store houses over every quarter of the globe. Lime, gypsum, marl, &c., had been forming to aid him in giving fertility to the soil which he was to cultivate by the labour of his hands, and the sweat of his brow. The materials for building, granite, marble slate, and various earths were thus prepared for his use. The various metals so essential to art and husbandry, and as a medium of exchange, had many of them undergone fusion, and were now visible to his eye and open to his hand. Vegetables, fruits and grains, birds and quadrupeds, adapted to his omnivorous habits, had already been created for him; and salt had been laid up in caverns, and by upheavals had been elevated into mountains, to serve as a condiment for his food.

We have next a history of the creation of a single pair of the human species—of the paradise in which they dwelt being situated in so warm a climate that clothing was superfluous—then of their fall and degradation.

Whatever changes have taken place in man's physical

and psychical character, his present organization gives the strongest proofs of his descent from predecessors similarly organized ; and the errors and sins of his life afford evidences of his inherent corruptions.

We have next a remarkable and astounding prediction, connected with a promise, in unison with the benevolent character of the Deity, and suited to the wants of frail, but intelligent, progressive, and immortal man. A deliverer was promised—the seed of the woman was to bruise the serpent's head.

In the lapse of ages one prophet succeeded another, revealing more and more distinctly the character and the message of the promised Messiah. He came at the appointed time, clothed with the purity of an angel, and displaying the attributes of a God. The warfare which he and his followers from that day to this have waged against ignorance and error, infidelity and sin, are matters of history.

Man has been rescued from barbarism and degrading sensuality ; his head has become the throne of intellect—his heart the seat of benevolence and virtue, and his mind enlarging and becoming more and more spiritualized gives evidence of his Divine origin, and his exalted destination. These teachings of a promised deliverer of the human family, have, according to the predictions, been conveyed to all the races of men in every quarter of the globe, as well as to the Islands of the sea. And now the introduction of the Gospel into portions of Africa, and the immense number of coloured christian communicants, in our Southern States, affords us the evidence that another prophecy is fulfilling, that Ethiopia shall stretch out her hands unto God !

We are farther informed in Scripture that after ages

and generations had gone by, and the earth had been peopled by multitudes of inhabitants, a wide deluge had swept the whole human race from the earth, save only the single family of Noah and his sons—who were preserved in an ark that rested upon Ararat, a high mountain in the East.

Even should we be unable to discover in any portion of our globe the traces of this last convulsion, yet the various strata in the earth beneath our feet, the extinction of race after race in the inferior animals, reveals to us the evidences that this was the mode adopted by the Author of Nature in blotting from the map of creation one series of animals after another. The traditions too of all nations both civilized and savage point to a flood as having been the instrument in the destruction of the original inhabitants, and to a high mountain in which were preserved the germs of the future races of men.

This is succeeded by an account of the destiny of Noah's sons—their dispersion into tribes, and the confounding of their language “that they might not understand each other's speech.” “And the sons of Noah that went forth of the ark, were Shem, and Ham, and Japheth; and Ham is the father of Canaan. These are the three sons of Noah; and of them was the whole earth overspread.” To Shem was allotted a dwelling “from Mesha, as thou goest unto Sephar, a mount of the East.” Japheth was promised to be enlarged—his race was to be widely diffused, and he was to dwell in the tents of Shem. To the descendants of Ham, the father of Canaan, a severer destiny was pronounced, for it is declared that he shall be the servant of both Shem and Japheth.

If we follow the teachings of history, we discover in Shem the parent of the Caucasian race—the progenitor of the Israelites and our Saviour. In Japheth that of the

wide spread Mongolian, many of whom to this day are dwelling in tents—as the various tribes in the East, and on our Western Continent fully testify—and Canaan, the son of Ham, although we cannot regard his descendants as accursed, is still everywhere “the servant of servants.”

Reader! can all these coincidences, by any possibility have been accidental occurrences? The leaves in the book of nature, in the various strata of the earth's surface have been unfolded to us by the geologist. The map of ancient history, the teachings on the papyrus rolls, and the monuments of extinct races, have been laid open before us by geographers, philologists, and men of science; and modern travellers have told us of the characteristics of the present races of men. Have we not discovered that in every advance we have made in a clear interpretation of the book of nature, we have step by step approached nearer and nearer to the teachings of that volume which the wisest and the best of men have regarded as the truths of heaven, revealed to an erring world by infinite wisdom and unbounded goodness.

APPENDIX.

NOTE.—In p. 97, the last paragraph in reference to birds, we alluded to Dr. Morton's notice of a hybrid produced between two species of European wagtails, (*Motacilla alba* & *M. lugubris*). We quoted Blythe to show that this phenomenon which rested on an opinion of Temminck "required farther investigation." Mr. Gould, one of the most eminent of European ornithologists has carefully examined this supposed hybrid. He has pronounced it a true species and described it in the Magazine of Natural History, vol. 1st, p. 460. under the name of *Motacilla Yarrowii*. It is represented as a bird of Norway and Sweden, and straying sparingly into Great Britain. It is, therefore, not a hybrid, but an original species. This affords another evidence that all supposed hybrids occurring in a wild state require farther investigation.

NEW PUBLICATIONS.

SMITH ON THE NATURAL HISTORY OF MAN.

After the foregoing work had passed too far through the press to permit us to introduce any farther observations in the body of it, we obtained two publications on the natural history of the human species which contain so many interesting facts relative to the subject we have been treating, and being moreover two of the latest works of the kind, that we know of, we cannot omit giving a brief synopsis of their contents, and referring to such portions as either favour or oppose the views we have endeavoured to support.

The first is a work by Lieutenant Colonel Chas. Hamilton Smith.* The subject is treated in four hundred and sixty-four pages, and elucidated by thirty-four plates, giving well-executed portraits of various individuals among the different tribes of the human family.

This work seems to combine the usual traits exhibited in all the other writings of this author. It displays much reading and research, and gives the result of extensive travel, and desultory, but not minute and thoughtful observation. It contains a vast body of facts, but as he seldom makes any references to authorities, and has always betrayed a great degree of heedlessness in his writings, it is difficult to decide on the accuracy or value of the information he gives to the public.

He takes a general view of all the nations of the earth, makes constant reference to ancient history, and has evidently read many works on the subject that are inaccessible in America. No person can peruse this work without being interested and amused, if not instructed. His

*The Natural History of the Human Species, Edinburgh, 1848.

writings betray somewhat the character of the individual in his travels. He is rapid, discursive, scarcely allowing himself time to examine his facts. This latter trait in his disposition has for many years been the source of infinite perplexity to us. We strove to preserve some of the many American species of animals he had so hurriedly figured and described; but he had not taken time minutely to examine and compare his large ones, and he would not stoop to look at the small rodentia where he might have been more successful; now, alas, there is not one of all his new American species which is not placed in the list of synonyms.

He seems, in his last work, on the whole, to favour the doctrine of the unity of the human species; but finds one great stumbling block in the way of his adopting the theory in full; and this is the character of the ancient flat-head Indians of South America. Dr. Morton, who had carefully examined this subject, regards the ancient flat heads of the same race with other tribes now in existence, who disfigure the heads of their children in this unnatural manner. Smith, however, possesses singular views on this subject. He supposes these ancient people were naturally flat-headed; that the moderns, by this artificial contrivance sought to be imitators of a departed race who had possessed some knowledge of architecture, and had made some advances in civilization. He, therefore, believes that Dr. Morton's conclusions had been premature.* He offers some sensible remarks on the peopling of America through the Polynesian Islands,† on the South, and the Aleutian Islands, from Asia, on the North. This chapter presents a number of interesting facts, and good arguments in support of these views, which are not the less acceptable to us on account of their advocating a theory which is in unison with the opinions we have already expressed.

We discover, however, in this last work of Col. Smith the same defects that are found in all his previous writings. A disposition to confound fable with facts, to mix up among a vast body of learning, and a fund of useful information, some fanciful theory and hold on to it pertinaciously, as long as the paroxysm lasts, supporting it by all manner of doubtful authority. Sometimes these amusing but far-fetched and apocryphal theories are supported even in the next work with which he favours the public; generally, however, the new fantasy dies away before he arrives at the end of the book; and somehow or other his natural good sense comes to his aid before the volume has gone through the press; and the last chapter sometimes rectifies the errors of the first. He is fond of dealing in conjecture, and of publishing crudities and fables, the truth of which he himself appears to doubt, without seeming to recollect that under such circumstances they ought not to have been published; inasmuch as the next writer that may succeed him, hard pressed for facts or arguments, in support of some doubtful theory, will quote him as authority. We doubt whether he often reads his own works—or thinks of correcting his errors, or of consulting his own voluminous notes, made in his extensive travels through the period of a long and eventful life.

We confess these thoughts were forcibly suggested to us on perusing his last work. Evidencing the usual amount of valuable learning, and giving to the world many interesting facts, the authority of the book is greatly diminished by the want of judgement displayed in the selection of the materials.

*P. 146.

†P. 232.

One of the fanciful theories he seems inclined to adopt from M. de Serres, is, that although man might have originally consisted of three species, yet according to the law of progression in animated nature, they might all by the faculty of fusion become one species—the Caucasian. As an evidence of this he attempts to show that the higher order of animals pass successively through the state of inferior animals in transitu. The brain of man assumes first, that of an adult fish—then of a reptile, and then of a bird. It now becomes the brain of mammalia, and then of man. In this stage it first assumes the form of the negro—then successively that of the Malay—the American—Mongolian, and finally attains that of the Caucasian.* Thus whilst the believers in the plurality of species are constantly striving to add to the number of species, he seems to have discovered a convenient mode of gradually merging them into one, and that possessing the most perfect developement.

He offers sage reasons for believing from the statement of Peter Martyr, that a negro population was established at Darien before the arrival of the Spaniards in America.†

He informs us of “some tribes in Dongola and Sennaar, that have one lumber vertebra more than the Caucasian, and the stomach corrugated.”‡

He does not appear to be aware that these tales of travellers have long since been exploded. The recent hoax in reference to men with tails, as said to have been seen by a Frenchman in Africa, got up we presume in New-York, where these humbugs are frequently manufactured for the benefit of our credulous nation, had not yet been published, else we might possibly have had an infliction of the various traditions in regard to this new species of *Homo caudatus*, with references to several old travellers, the truth of whose statements was not long ago patronized and defended by Lord Monboddo.§

He furnishes his readers with ten pages on giants and dwarfs—some of the former we must confess, seem to us, prodigious; “Teutobochus, King of the Cymbers, whose head overtopped the spears.” The Emperor Maximus exceeded eight feet. “Gabarus was nine feet nine inches high.” “Puseo and Secondilla were ten feet three inches in height.|| The Emperor Andronicus was ten feet high, etc..

In a note at page 119, he gives the opinion of many white colonists that “no negro woman, having born a mulatto child is ever after the mother of a black, she becomes they say, in that respect sterile. But surely, (he adds,) this must be very doubtful, although our researches do not invalidate the assertion.”

This error might be easily overlooked if he did not in another place, (p. 215,) state that his personal observations on the negro races extended to a period of ten years, in Africa, the two Americas, and the West Indies.

He mentions another fact, the truth of which he vouches for, he hav-

* P. 126. † P. 203. ‡ P. 191.

§ The original story of the man with a tail was got up in the following manner. A German account of the Iloly Land was published at Mentz, “Reyss in des gelobte land, 1486,” in which there was a figure of a quadrumanous monkey—this was first copied by Gessner, then by Aldrovandus, then by Linnaeus in his *Aménitates*—this was finally copied by Martini in his version of Buffon. Thus this quadrumanous simia was gradually transformed by those who successively copied the engravings, into a two handed being—a man with a tail.—*Blumenbach, sect. 3, p. 76.*

|| P. 139.

ing frequently witnessed it—that “so coarse is the wool of a negro’s head, that when struck with the knuckles it frequently cuts the skin to the bone. The pile of the beard, &c., is equally file-like or lacerating,”—there was a “general impression that this kind of hair is angular,”—he doubts whether Dr. Prichard’s observations, who had, as he states, expressed a different opinion is correct. We must admit if such a species of negro exists, we have not met with him in the United States. He gives us a chapter* which is a curiosity of its kind, entitled *Human Ossauries with Bones of extinct Animals*,† and in a note at p. 453, he refers to a fossilized human body, said to have been disinterred at Gibraltar, in 1748. It was found fifty feet above the level of the sea, by blowing up a rock in which it had been imbedded. The body was eight feet and a-half long, with flesh, and appearance of veins still preserved, and in the solid part of the stone a sea shell.

Let us now look for his authorities,—we are obliged to refer to Col. Smith’s own statement, as we will venture to say that no one, not possessed of his careless independence would have ventured to publish it.

A dissertation was said to have been read at the Royal Society in 1748, on the antiquity of the earth,—this was bound in a volume, whether printed we are not informed. Some person whose name could never be ascertained wrote a note on a slip of paper, which by the water mark indicated the year 1790, forty-two years after the occurrence. He signed himself J. W.:—he stated that the writer had heard the story at Gibraltar—that the officer on duty did not come to witness the prodigy, and the impatient soldiers blew it up, and thus the whole specimen was scattered to the winds. The book with the note containing the precious hoax, probably a slur on the author, fared no better. If it ever existed no one has since been able to find either the book or the loose paper shoved into it. We confess this seems to us but a narrow pedestal to support a theory on giants.

He is not more fortunate in the preservation of other fossilized human bones. They were always discovered by ignorant superstitious labourers, who “in the plenitude of their ignorance and prepossessions,” as he terms it, fearing probably a nocturnal visit from the grim ghosts of these antediluvians, threw them away, hence no one was left to tell the story but a ghost-stricken labourer, and none to perpetuate it but Col. Smith.

On the subject of hybrids, he does not seem fully to have changed his mind, but he speaks so doubtingly and cautiously, that we strongly suspect his brethren at the Zoological Society in London, who belong to another school, have given him some lessons which have materially shaken his faith. He notices, however, the American variable hare as producing a fertile progeny with the European rabbit. As however, as usual, he makes no references to any work where these experiments so successfully made, are recorded, we will not notice his statement further than to add, that we preserved these species together from time to time for several years, and if he had been there to have witnessed their repugnance and the incessant war they waged against each other,

* We committed an error in quoting him in the former part of this work as having published this chapter in the *London Ethnological Journal*, we wrote from the information of others, having not then seen the present work.

† P. 107.

causing the fur to fly in all directions, and finally worrying each other to death, he might possibly have been more cautious in suffering his assertions to go into print.

In another part of his volume, however, when he was desirous of proving that man had his origin in Western Asia, he seems, without having been aware of it, to have demolished nearly his whole theory in regard to domesticated animals having sprung from the commingling of two or more species. He traces the origin of the dog to that locality. What then becomes of the progenitors of which he has spoken so confidently—the wolf, buansu, the anthus, the dingo, the jackal, the d’hole and the thus? Surely, they are not all congregated there? “The hog found radiating from points where the wild species occur.” Where then are his three, if not four original species “which he spoke of in a former work as endowed with the powers of unlimited reproduction?” “The wild cat” he continues, “similar to the European, now haunts the same and prowls far onwards in the North.” What then has become of the blue or Chartreuse cat—the Bengal cat, the tortoise-shell cat, indigenous to South America. He further adds of the poultry—“One domesticated species at least, was carried in man’s earliest migrations onward to Egypt and the West of Europe, as well as to the farthest islands in the South seas; perhaps, even to Chili, before the arrival of the Spaniards.”

Is all this at last admitted, and is this species found also in Africa? It is the black cock (*Gallus morio*) about which there have been such positive statements in regard to its being a new species. And is this “our domesticated species” not only carried to Africa but to the West of Europe, also to the furthest island of the South sea, and to Chili. Why this is fairly robbing us of the credit of our discovery that they all originated from one species, inasmuch as this will embrace the whole of the ten species of which we have heard so much: the Malay fowl, the frizzled fowl, and Capt. Steadman’s fowl in South America included. Had all this been admitted a few years earlier, it would have saved us not a little trouble in our attempt at correcting his errors, and our friend Dr. Morton, as we fear, some annoyance.

These, it must be admitted, are blemishes in the book which we think no one will be disposed to defend. We have, however, only pointed out what appeared to us as most exceptionable. It contains many just and sensible remarks in regard to the various races of men, and with the above exceptions is a valuable addition to our previous knowledge. Although careless in his style, (a matter of as great indifference to us, as it is to him, as long as he gives us facts) he writes pleasantly, with an air of good humour and with no disposition to mislead his readers, as he only follows the bent of a vivid imagination, and a somewhat wayward fancy. We always sit down to his writings as to a rich repast. We make our own selections, it is true, from his varied dishes. They are calculated to be a specific for a time at least for ennui, and an elixir for dyspepsia.

We regard it as one of his merits, that without a design to offend any one, he expresses his opinions always respectfully but fearlessly. He is too independent to suffer himself to be led, and too obstinate to be driven. The writers in the London Ethnological Journal, Burke, Gliddon & Co., seem to be wooing him to aid them in a mighty cause they have espoused and are endeavouring to promote. We cannot but think

Smith would become a restive and an unmanageable steed in such a team. He will always think and act for himself; money cannot purchase, the voice of fame cannot allure, and the reins of infidelity can neither guide or curb him. Should they attempt to force on him their new discoveries, in the mode of reading hieroglyphics by which they hope to be enabled to stretch our at present received chronology two thousand years before Moses, in which the white, the black, the red and the other races existed, his love of truth would, in some lucid moment of sober thought come to his aid, and he would indignantly cut the cord of their chronology, and single-handed, blow up and demolish the tawdry mausoleum which they are endeavouring to erect over the grave of Christianity, even before the giants of Germany and England who are now rallying their forces will have time to man their batteries.

DR. PICKERING ON THE RACES OF MEN.

The work of our old friend, Dr. Pickering, which he had the kindness to present to us without being aware that we were writing on the subject, or that it would come so opportunely to our aid, is not to be lightly spoken of. Dr. Pickering was one of the members of the scientific corps attached to the United States' Exploring Expedition which sailed around the world, and visited many countries and distant islands which were previously but partially known. He was regarded as one of the best read naturalists in the United States, even previous to his appointment to that enviable station. Our recommendation which was given at the time, could scarcely have been necessary to secure his claim.

All our writers in the various departments have, from time to time, sought from him the aid which his extensive reading and knowledge of species, afforded. We freely and cheerfully admit, that we have on more than one occasion been placed under obligations to him in this way, and have profited by his careful research and sound judgment.

The expedition in which our adventurers and fortunate explorers were engaged, continued for five years from 1838 to 1842. After Dr. Pickering's return, he was anxious to continue his investigations on the physical history of man, in regions which the expedition had not reached; he accordingly, in October 1843, sailed for Gibraltar and visited Egypt—the pyramids, &c.; made himself acquainted with the various Arabian races, and returned to America on the following May.

The result of his labours and experience is now before the public. The work evidences very extensive research and is throughout characterized by a knowledge of all the branches of natural history which have a bearing on this subject, &c. The engravings and typography are highly creditable to our American artists.*

The opinions of Dr. Pickering, the first extensive American traveller who has devoted himself to, and written on the physical history of man, are entitled to more weight than all the other writings on the subject, that have ever issued from the American press.

The public had been previously informed that the doctrine of the unity of the human races had not only been abandoned by Dr. Caldwell,

*The races of men and their geographical distribution, by Charles Pickering, M. D.

but also by Dr. Pickering, that this was also generally the case with all the recent systematic writers in Europe and in this country, and that "the question viewed simply as a question of science, may be regarded as fairly settled in the negative."* Having by these means been misled, we feared that we should meet with a most formidable opponent in one who was infinitely better qualified to pronounce a decision than ourselves. To our agreeable surprise, however, we find him coinciding with us in nearly every important principle we have endeavoured to advocate in the preceding essay, and we hail the work of Dr. Pickering as one of the most important auxiliaries that in the present state of our knowledge we could possibly have obtained.

The necessity of meeting the demands of the printers and the small space allotted to us in the appendix, have prevented us from giving to this work more than a hurried perusal, and compels us to be brief in our review of his facts, which will be more satisfactory to our readers if given in extracts from the work itself.

1. We do not perceive that he has made any observations in regard to hybridism, a subject which we have investigated and on which we have offered our views to some extent.

2. On the subject of varieties produced in the lower animals, he says,† "This whole subject of varieties has received from Naturalists very little attention; and when it shall be better understood, it may perhaps throw light upon the origin of the races of the human family." We have bestowed some attention to this subject, and although we have not given in full the result of our labours, as they would fill a volume, yet we trust we have been enabled to make some additions to our previously existing stock of knowledge in this department.

3. We hinted the probability that our Indian dog had been brought to America by the original Mongolian and Malay immigrants. Pickering states "America when first visited by Europeans appears to have contained but a single species of quadruped of foreign origin, the domestic dog. The route of its introduction is indicated by various circumstances, such as the aboriginal use of this animal, for draught, on both sides of Behring's Straits, and the interweaving of the hair in blankets by the neighbouring maritime tribes."

4. We endeavoured to prove that the same species of animal was not created in two localities. Pickering observes, "species are found to have a certain geographical range; and notwithstanding a few instances of wide diffusion, nature has not reproduced a species in different quarters of the globe."

5. We stated that varieties once formed, and become permanent, never revert again to the form of the original species. We produced this as a reason why the negro does not become white in our country—or the white man black in Africa. Pickering says, "Within my own observation, I have found no tendency in varieties to revert in the course of successive generations to the original type.‡

6. We mentioned the fact that varieties of several of our species of domesticated animals—the sheep, hog, common fowl, &c., became black within the Tropics. Pickering incidentally mentions that at Poona, "there is a small variety of pigs uniformly black,"§ and "that the majority of the sheep, like those in Egypt, were also black.||

*Dr. Nott's Lectures, p. 53.

†Pickering on the physical races of men, p. 303.

‡P. 305. § P. 264. || P. 215.

7. We offered reasons for the truth of the doctrine that it was impossible, from the organization of man, that he could have originally been created in a cold climate. Pickering states, "Man then does not belong to the cold and variable climates; his original birth-place has been in a region of perpetual summer, where the unprotected skin bears without suffering the slight fluctuations of temperature. He is, in fact, a production of the tropics; and there has been a time when the human family had not strayed beyond these geographical limits."*

8. We ventured on the perilous experiment of controverting the views of Prof. Morton, and other recent authors, in regard to the origin of the American races, and offered our reasons for believing that they had not originated on the American soil, but had been received by various immigrations from Asia, from the Monguls at the North West, and the Malays through the Polynesian Islands, along the South-Western coast of America. Under this head Dr. Pickering is precise and full in various parts of his valuable work. He states, "To persons living around the Atlantic shores, the source of the aboriginal population of America seems mysterious, and volumes have been written upon the subject.

Had the authors themselves made the voyage to the North Pacific, I cannot but think that much of the discussion would have been spared. In the absence of such an opportunity, a reference to a good globe may be useful before entering upon the question. But I confess it was only on visiting that part of the world, that the whole matter seemed to open to my view."† He then devotes a chapter to this subject, showing in what manner the aborigines of America were unquestionably derived from the Mongols on the North, and through the Polynesian Islands from the Malays. He gives an account of the character of the coast in North Western America, of the populous and maritime tribes, and says, "The Islands of the Aleutian group stretching in close proximity to the very borders of Asia, are inhabited by the same class of population. Where then shall Asia end, and America begin?" Speaking of the skin canoes found on the Aleutian Islands of which he had seen one "which was so perfectly adapted to the purposes of navigation that it seemed almost to enable man to take the place among the proper inhabitants of the deep." Such vessels he says, "are obviously fitted to cope with the open sea, and so far as the absence of sails permits, to traverse a considerable expanse of ocean." He further adds, "The presence of these skin canoes among the Esquimaux of the Greenland seas, was long regarded as proof of the existence of a North-West passage; and it likewise indicates the course of human migration." Further on he remarks, "Men of a second physical race, have aboriginally found their way to the Western coast of America, and by the open sea, which latter circumstance will be found to have certain bearings."

"The Polynesian groups are every where separated from South America by a vast expanse of ocean, where rough waves and perpetually adverse winds and currents, oppose access from the West. In attempting from any part of Polynesia to reach America, a canoe would naturally and almost necessarily be conveyed to the Northern extreme of California; and this is the precise limit where the second physical race of men makes its appearance. So well understood is this course of navi-

*P. 302.

†P. 287.

gation, that San Francisco, I am informed, is commonly regarded in Mexico as 'being on the route to Manilla.'"

"Again, the Northern extreme of California is as favourably situated for receiving a direct arrival from Japan. At the present day, owing to a change in national policy, Japanese vessels are only by accident found at large; but within a few years one has been fallen in with by a whale ship in the North Pacific, another has been wrecked on the Sandwich Islands, and a case more in point, a third has been drifted to the American coast near the mouth of the Columbia river."*

He confirms our experience in regard to the oblique eye, supposed to be characteristic of the Mongolian race. He says, "as to the 'oblique eye' so generally spoken of as characteristic of the Chinese, I have found it among them in some instances, and also among the Chenooks of North-West America, but I have not been able to make much use of it as a distinctive character." He further adds, "Notwithstanding the recent encroachments, the greater portion of the American continent is still inhabited by Mongolian tribes; and while some of them wander towards the North farther than civilized man has hitherto been able to follow, others are still the nearest dwellers to the Southern pole."†

We confess when we ventured to revive an old-fashioned and apparently exploded theory, we had little hope of so soon obtaining the aid of so powerful a coadjutor to divide the responsibility with us.

9. We perceive Dr. Pickering experienced the same difficulty with ourselves in grouping the different races according to the divisions of Cuvier, Blumenbach, Dr. Morton, etc. Nor could the peculiar but ever varying formations in the skulls of these races afford any surer guides. Hence he has made the following divisions and subdivisions.

(a) *White*. 1. Arabian. 2. Abyssinian. (b) *Brown*. 3. Mongolian. 4. Hottentot. 5. Malay. (c) *Blackish brown*. 6. Papuan. 7. Negrillo. 8. Indian or Telingan. 9. Ethiopian. (d) *Black*. 10. Australian. 11. Negro.

He confirms our views in regard to the various shades of colour and the admixture of adjoining tribes.

He finally sums up all his evidence in regard to the unity or plurality of the races in the following language.

"There is, I conceive, no middle ground between the admission of eleven distinct species in the human family, and the reduction to one. The latter opinion from analogy with the rest of the organic world implies central point of origin. Further zoological considerations, though they do not absolutely require it, seem most to favour a centre on the African Continent. Confirmatory circumstances of a different character are not wanting; some of which may be worth enumerating." He then proceeds to show the streams of population that have been sent forth by the Arab and African tribes.

He affixes an interesting map on which is placed a circle in Ethiopia, from which in dotted lines he points out the probable paths pursued by man in his migrations to the farthest ends of the earth.

*P. 288. †P. 16.

We adhered to a resolution we had made previous to preparing this Essay not to read the work of Prichard, until we had completed our labours. We preferred being led into an occasional error, rather than suffer ourselves to be swayed by the opinions of others. We preferred giving the result of original observations, however defective, to a dependence on authorities even of the most established reputation. In a few cases we departed from this rule, in the examination of skulls, &c., and were compelled to submit to necessity, as the materials were not available. After this work was nearly printed we procured Prichard's *Nat. Hist. of Man*—his other works we have not seen. We were aware of the conclusions at which his mind had arrived, but not of the process by which his investigations had been pursued. We had, however, both studied the same book of nature, and had access to the same works of science. We regard it as an argument in favour of the doctrine we advocate, that we should have arrived at the same conclusions in an examination of facts by different processes, and in widely separated countries. We have examined more minutely the cases of hybridity, and the changes produced on domesticated animals, and he has entered into full details on a far more interesting branch of the subject, an examination of the various races of men. In the latter department, we cheerfully admit the infinite superiority of his authority, and recommend his work to the perusal of those who desire to investigate this subject.

Whilst, however, we do not in general differ much in our views, there is one point in which our experience does not warrant us in coinciding in his opinions. He expresses the belief that "a restoration of domestic animals to the wild state causes a return to the original characters of the wild tribe."*

That a return to the wild state of domesticated animals is succeeded by considerable changes in form, we readily admit, but we possess no evidence that they ever return to their original forms and colours. We will here condense the result of our experience in a few of the species.

In the few horses we examined that had been captured when young on the steppes of Tartary, we observed that they were generally of a pale brown colour with manes and tails dark brown and sometimes black, they were smaller than the domestic breeds—their heads were larger—legs longer and foreheads more convex. This may have been the form and colour of the original horse. It is even probable that this is the original wild horse. Those we have examined from South America and Mexico captured from the droves of wild horses appeared to resemble in form the horses originally introduced by the Spaniards. In Colleton District, South Carolina, there existed about thirty years ago, large droves of Horses, Cattle, and Hogs, whose progenitors, as we were informed, had been in a wild state since the Revolutionary war. They have since been nearly exterminated, in consequence of their having been so constantly joined by the tame breeds, who in their turn, soon became wild. The horses were less in size than the domesticated ones—they were of different colours—excessively wild—seemed always to have a sentinel on the look out—preferred open marshes to woods—would suffer no human being approach within gun shot, and when fairly started, would run a mile or two without halting—their trappings were like the sounds of distant thunder.

*Prichard's *Nat. Hist. of Man*, p. 39.

The horned cattle were equally wild, but not ferocious, seldom attacking the hunters who pursued them with horses, nor standing at bay unless wounded. Their meat had more of the taste of venison than that of beef—they were of all colours—were rather finer formed than the domestic cattle in the vicinity—their speed was about equal to that of the buffalo.

The hogs, although of different colours, were nearly all black—this indeed was the usual colour of the native Carolina hogs, until within the last few years when superior breeds of various colours have been introduced. Their tusks were longer than those of the domestic hog—they possessed all the vicious habits of the wild boar when pursued, and when hard-pressed turned furiously, upon both horses and dogs, often lacerating the bodies of, and killing the latter at a blow. We have observed in two of our districts, flocks of turkeys that had escaped from domestication and become wild. We obtained specimens from the woods that in the third generation still continued white. The common house-cat has strayed into the fields and woods in Carolina, and some of them are now wild—they become larger in size than the tame cat—but are various in colour. Our late and lamented friend, Dr. Wurdemaun, informed us that the dogs that had grown wild in Cuba, seldom were heard to bark, had become large, fierce, and greatly changed in form, but still continued of different colours like the originals from whom they had descended.

The above are some of our reasons for believing that varieties once formed, may produce other varieties, but never return to the forms and colours of the original species.

DARWIN'S OBSERVATIONS.

We omitted to notice in our examination of the changes which had been effected in domesticated animals, an account incidentally given by Darwin, the naturalist, of the beagle, in a voyage round the world. He mentions a singular breed of cattle which have originated among the Indians, South of the Rio Plata, in the Banda Oriental, and are called the Niata breed. The following is his description :

“They appear externally to hold nearly the same relation to other cattle which bull dogs hold to other dogs. Their forehead is very short and broad, with the nasal end turned up, and the upper lip much drawn back ; their lower jaws project much beyond the upper, and have a corresponding curve ; hence their teeth are always exposed. Their nostrils are seated high up and are very open ; their eyes project outwards ; when walking they carry their heads low on a short neck ; and their hinder legs are rather longer, compared with the front legs than is usual. Their bare teeth, their short heads, and up-turned nostrils, give them the most ludicrous self-confident air of defiance imaginable.”*

A skeleton head of this animal was deposited in the College of Surgeons in London, and described by our friend Mr. Waterhouse.

We have here another example in evidence of the fact, that without the slightest intermixture of foreign varieties, new breeds of cattle

*Darwin's *Voyage of a Naturalist*, vol. 1, p. 186.

spring up in America. They made their first appearance about eighty years ago, when one was occasionally brought to Buenos Ayres, now they have become the only race in an immense region of country where they are nearly wild. What causes have operated to produce this variety? There are no wild animals, not even the buffalo in that country, from which any admixture could by any possibility have been derived. Were we not positive of their origin, they would unquestionably be regarded as a new species.

Let us apply these instructive lessons of nature in one department to our investigations in another. If causes, that are at present hidden from our knowledge produce such striking variations in the skulls and anatomical structure of one race of animals, we need not be surprised if similar phenomena are exhibited in the races of men. Let us place in contrast, first the skulls and the whole skeletons of the most widely removed types of the African and the Caucasian—and then the skulls and skeletons of our common cattle, and those of the Niata breed. If we are compelled to regard the latter as only varieties—we have no authority in elevating the former into distinct species.

LAST CORRECTED OPINIONS OF HUMBOLDT.

We received within the last few days the corrected edition, "Berlin, 1849," of the illustrious Humboldt's "*Ansichten der Natur*." Although we have already trespassed too much on the limitations to which we had restricted ourselves with our publisher, we yet feel constrained briefly to allude to the deliberate opinions of an enlightened philosopher and venerated friend, expressed at the close of a long and eventful life.

In the synopsis he has given us of the theories he advanced in his previous voluminous writings, and in the very few corrections and modifications he has found it necessary to make of his former opinions, we are gratified to find that wherever he has alluded to any of the subjects investigated in this essay, his views are in accordance with our own. His deep researches and extensive travels established in his mind a belief in the doctrine of the unity of the human race. He expresses similar views with ours in regard to the distribution of animals and plants in the several zoological regions. He accords with us in the belief, after having seen thousands of Lamas in their native hills, that there are but three species instead of the six, described by Col. Smith. He finally devotes a chapter in pointing out the channels by which America could easily have received its original inhabitants from Asia.

The opinions of enlightened men who combined the double advantage of having been extensive travellers, and are at the same time eminent naturalists, such as Lichtenstein, Von Martius, Darwin, Pickering, Humboldt, &c., ought surely to be received with at least as much consideration, as those of our American philosophers, who have more recently entered the field of argument, without having been previously trained in the field of research.

More especially should the deliberate views of Humboldt in matters of science, be received with that respect to which they are entitled by his knowledge—his long experience and honesty of purpose. In our

estimation he has not only been the most profound and instructive, but the most fortunate of travellers. His whole life has been devoted to the enlargement of the circle of knowledge and the improvement and happiness of the human race. He has perpetuated no doctrines that are opposed to the laws of nature—that are injurious to morals or subversive of Christianity. At the advanced age of eighty-one, he preserves his erect commanding stature—an unimpaired health and a clear and vigorous intellect—enjoying the respect, admiration, and gratitude of the world and the approbation of his own heart. May he on escaping from “the stormy waves of life” realize in a still loftier and more exalted sense his own aspirations which he so feelingly expresses in a quotation from an admired poet, in allusion to the freedom and purity that reign on the highest earthly mountains:

“Auf den Bergen ist Freiheit; der Hauch der Grufte
Steigt nicht hinauf in die reinen Lufte.”

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ERRATA.

- Page 43, line 3, from top, for an article in the Ethnological Journal—read
Nat. Hist. of the Human Species.
- Page 60, line 10, from bottom for pachydomata, read pachydermata.
- Page 78, line 15, from bottom, for 75, read 175.
- Page 102, line 3, from bottom, for Maga read Mago.
- Page 103, line 6, from bottom, for ruffled read ruffed.
- Page 145, line 14, from bottom, for acaris lumbricis and acaris, read ascaris
lumbricoides and ascaris.
- Page 228, line 12 from top for Circassians, read Caucasians.
- Page 228, line 5, from bottom, for American read African.
- Page 232, line 14, from bottom, for races read families, and for family read
race.
- Page 253, line 6, from bottom for former read latter, and for latter read former.
- Page 251, line 9, from top, for Thlapsidroma read Thalassidroma.
- Page 304, line 3, from bottom, after being add to

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